

Sub Order Eyocoetoidea

Mouth small. Second and third upper pharyngeals with teeth, third pair strongly enlarged, together forming somewhat convex ovoid plate. Fourth upper pharyngeals broad, triangular, with concave upper surface. Pharyngeal teeth on principal plates villiform in front, behind with incisors, their edges transversely expanded and horizontal. Intermediate forms of teeth, many tricuspid, connect above types. Scales rather large.

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Holacanthus vroliki Bleeker.

Holacanthus vroliki Bleeker, Nat. Tijds.

Ned. Indië, deel 5, 1853, p. 339. Amboina.

— Bleeker, Atlas Ichth., vol. 9, 1877, p. 63,

plate (9) 371, fig. 1 (Flores, Timor, Ternate,

Buru, Obi major, Ceram, Amboina). —

Klunzinger, Fisch. Roth. Meer., 1884, p. 60. —

Steindachner, Abhandl. Senckenberg. Gesell.,

band 25, 1900, p. 421 (Batjan). — Weber,

Siboga Exped., band 65, 1913, p. 312 (Banda).

Holacanthus vroliki Günther, Cat. Fish.

Brit. Mus., vol. 2, 1860, p. 51 (Amboina and

Ceram). — Klunzinger, Verh. bot. ges. Wien,

band 20, 1870, p. 787 (Red Sea).

Analysis of Families

a. Mouth cleft narrow, lower jaw usually extended; pectorals not elongated as organs of flight.

Hemiramphidae.

a. Mouth cleft short, jaws not produced in long beak; pectorals more or less elongated as organs of flight.

Exocoetidae.

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Depth $1\frac{2}{3}$ to $1\frac{7}{8}$; head 3 to $3\frac{7}{8}$, width $1\frac{2}{5}$ to 2. Snout $2\frac{3}{5}$ to 3; eye $2\frac{1}{2}$ to $4\frac{1}{8}$, greater than snout in young to $1\frac{1}{3}$ with age, greater than interorbital in young to $1\frac{1}{5}$ with age; maxillary about to eye in vertical, $3\frac{1}{2}$ to $3\frac{3}{5}$ in head; interorbital $3\frac{1}{4}$ to 4, broadly convex; preopercle spine along upper edge $2\frac{3}{5}$ to $7\frac{1}{2}$. Gill rakers 4 + 12, short, robust, lanceolate, $4\frac{1}{2}$ in gill filaments, which $1\frac{1}{5}$ in eye.

Scales 32 to 46 between gill opening and caudal base; 7 scales above lateral line, 19 or 20 below. Scales with 7 or 8 basal marginal striae; apical denticles 16 to 27, each with long slender rootlet; circuli fine.

D. XIV or XV, 15, I or 16, I, last spine $1\frac{1}{3}$ to $1\frac{2}{3}$ in head, sixth ray $1\frac{1}{4}$ to $1\frac{2}{5}$; A. III, 16, I, third spine $1\frac{2}{5}$ to $1\frac{3}{5}$, sixth ray $1\frac{1}{8}$ to $1\frac{1}{5}$; least depth of caudal peduncle $1\frac{4}{5}$ to $2\frac{1}{4}$; caudal 1 to $1\frac{1}{4}$, convexly rounded behind; pectoral 1 to $1\frac{1}{8}$; ventral $2\frac{3}{4}$ to $3\frac{1}{4}$ in combined head and body.

Brown, little paler and fawn color on belly, tail and vertical fins becoming dusky-brown. Each scale on trunk and tail ^{anteriorly} with rather small light or grayish spot. Iris brown. Posterior opercular border blackish-brown, as broad blackish band on opercle and on shoulder girdle in young.

Family Hemiramphidae

Body very elongate, slender, cylindrical or compressed. Upper jaw short, lower various, usually much produced and toothed portion at base fits against toothed premaxillaries. Maxillary firmly united with premaxillary. Teeth ^{in jaws} equal, small, compressed, tricuspid. No teeth on palate or tongue. Gill rakers long. No pseudobranchiae. Air bladder large, simple or sometimes cellular. Vertebrae 49 to 55. Scales large, thin.

deciduous and cycloid. Dorsal and anal moderate, latter usually like former or modified in viviparous forms, unmodified in oviparous forms. Caudal rounded, truncate or forked, when forked lower lobe longer. Pectoral inserted rather high, usually short, rarely elongate. Ventral moderate or small.

Herbivorous fishes of warm seas, mostly living along shore though a few pelagic. They feed on minute bits of vegetable matter, especially green algae. Like the related saurians, green gars and flying fishes, they swim at the

surface, occasionally leaping or skipping along above. In size they are rather small, the larger rarely exceeding a foot. Though living in all tropical seas some enter fresh water while others live exclusively in brackish or fresh waters.

Analysis of Genera

a. Euleptorhamphinae. Body very slender, compressed, band like; pectoral fin very long; ventral short, inserted posteriorly. Euleptorhamphus.

a.² Body moderately compressed, not band like; pectoral moderate.

b. Dorsal begins above or before anal origin, usually longer than anal.

c. Hemiramphinae. Caudal forked or emarginate; anal not modified; oviparous.

d. Beak without broad cutaneous flap along each side.

e. Sides of body mostly convex; air bladder simple; ventral inserted far before dorsal.

Hyporhamphus.

e.² Sides of body largely flattened;

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body) in upper section of lateral line, 12 in lower section to caudal base and 2 more on latter; 4 scales above lateral line, 11 below, 14 predorsal forward opposite front pupil edge, 5 rows on cheek. Muzzle, including preorbital and maxillary, naked. Scales with 12 to 22 basal radiating striae, apical denticles 77 to 118; circuli very fine.

D. III, 29, I, third spine $2\frac{3}{5}$ in total head length, third ray $1\frac{1}{2}$, twenty-fifth ray 1; A. III, 15, I, third spine 3, third ray 2, twelfth ray $1\frac{1}{8}$; caudal 1, rounded convexly behind; least depth of caudal peduncle $1\frac{3}{4}$; pectoral $1\frac{1}{3}$; ventral $2\frac{2}{3}$ in combined head and body to caudal base.

Light brown, paler on lower head, breast and belly. On body each scale with gray white spot, thus forming

air bladder cellular; ventral²⁵²
inserted rather close before
dorsal. Hemiramphus.

d.² Beak with broad cutaneous
flap along each side. Loligohamphus.

c.² Genarchopterinae. Caudal truncate
or convex behind; anal sometimes
modified; viviparous.

f.¹ Lower jaw extended as beak.

g.¹ No teeth on beak in its
extension before upper jaw.

Hemirhamphus. Genarchopterus.

g.² Teeth on beak in extension
before upper jaw.

Hemirhamphodon.

f.² Lower jaw not produced in
beak.

Aurhamphus.
melanopodum →

b.² Dermogenyinae. Dorsal begins behind
anal origin and fin shorter than
anal.

pale bluish white lines on preopercle.
 Black spot behind opercle with
 vertical bluish white line through its
 anterior third. Body covered with
 scattered blue spots. Dorsal, anal and
 caudal with faint blue spots, not unlike
 broken up undulating lines. Young
 with dark brown line running from
 snout through eye to end of dorsal
 fin, which disappears with age.

(Murray.)

Known only from the Persian Gulf. Size
 not given.

h.¹ Lower jaw extended as long
beak. Dermogenys.

h.² Lower jaw not extended
as long beak. Homorhamphus.

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Pseudochromis persicus Murray

Pseudochromis persicus Murray, Journ.

Bombay Nat. Hist. Soc., no. 1, vol. 2, 1887, p.

49. Persian Gulf; Indian Annals Mag.
Natural Sci., vol. 1, 1887, p. 24. —

Regan, Journ. Bombay Nat. Hist. Soc., vol.
16, pt. 2, 1905, p. 330 (Persian Gulf).

Depth $4\frac{1}{2}$ (in total), equals space between
snout tip and hind preopercle edge. Snout
equals eye. Scales in upper section of lateral
line 55, in lower section 10; scales
transversely 15; opercles scaly; caudal
scaly $\frac{1}{2}$ its length. D. III, 38; A. III, 19;
dorsal and anal produced posteriorly
and pointed; posterior dorsal rays
and all rays of anal, caudal and
paired fins branched; pectoral rays 18;
ventral I, 5. Pale fleshy on body. Head
and snout brown, two longitudinal

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Genus Arhamphus Günther

Arhamphus Günther, Cat. Fishes Brit. Mus., vol. 6, p. 276, 1866. (Type Arhamphus sclerolepis Günther, monotypic.)

Body elongate, compressed. Head moderate. Premaxillaries form triangular plate, broader than long. Mandible but slightly protruded before upper jaw, not prolonged into long beak. Maxillary not reaching eye. Teeth in narrow or broader bands in both jaws, minute or moderate and often tricuspid. Gill opening wide. Gill rakers present. Scales moderate or large, rather deciduous. Lateral line low. Dorsal far posterior. Anal opposite and similar to dorsal or more backward. Caudal forked. Pectoral high, less than head. Ventral inserted nearer head than caudal base.

East Indies, Philippines,
Australia.

Analysis of species

a. Arhamphus. Scales before pectoral base small and crowded; ventral inserted midway between ~~hind eye~~ ^{snout tip} ~~edge~~ and caudal base; vertical fins without black tips. sclerolepis.

a. melapedalion new subgenus.

Scales before pectoral not especially small or crowded; ventral inserted midway between hind eye edge and caudal base; vertical fins with black tips. brevis.

Subgenus Arhamphus Günther

of head. Upper edge of soft dorsal black and black band from front of fin medianly extends obliquely over base of fin posteriorly, then down over front of caudal peduncle to middle of posterior anal rays. Anal edge narrowly white, with submarginal black line. Caudal with hind edge narrowly white, with narrow submarginal black band; medially black band, broad, narrowing above and below. In young sub-marginal black band appears only as median dark line close behind broad dark median band. Paired fins pale brown.

Red Sea, Madagascar, Mauritius, Reunion, India, Ceylon, Nicobars, ^{Indonesias}, East Indies, China, Queensland, ^{Melanesia}, Polynesia. Though showing slight structural variations the color pattern is very uniform in our materials. A very young example shows the caudal fin fully pale. In 2 examples (226 and 554) the dark lines are interrupted and variably irregular on the right and left sides respectively though the opposite side of each is of the normal pattern.

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Arhamphus sclerolepis Günther

Arhamphus sclerolepis Günther, Cat. Fishes Brit. Mus., vol. 6, p. 277, 1866 (type locality: New Zealand?). Introd.

— Klunzinger, Sitzb. Ber. Akad. Wiss. Wien, math.-nat. Kl., vol. 80, pt. 1, p. 414, 1879 (Port Darwin; Port Denison). — Günther,

ales, vol. 5, pt. 2, p. 184, 1881 (Port Darwin; Brisbane); vol. 6, pt. 2, p. 248, 188

Saville-Kent, Great Barrier Reef, pp. 299, 370, 1893 (Moreton Bay). — Stead, Fish. Australia, p. 64, fig. 26, 1907 (New South Wales; Queensland). — Roughley, Fishes of Australia, p. 31, 1916 (New South Wales; Queensland). — McCulloch, Fishes New South Wales, ed. 2, p. 31, pl. 10, fig. 110a, 1927 (Richmond and Clarence estuaries); Austral. Mus. Mem., no. 5, pt. 1, p. 104, June 29, 1929 (sampled).

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Arhamphus sclerolepis Günther

Arhamphus sclerolepis Günther, Cat. Fishes Brit. Mus., vol. 6, p. 277, 1866 (type locality: New Zealand?). Introd. Study Fish., p. 621, 1880 (name);

Rep. Voy. Challenger, vol. 1, pt. 6, p. 33, 1880 (Mary River, Tiare, Australia). —

Macleay, Proc. Linn. Soc. New South Wales, vol. 5, pt. 2, p. 184, 1881 (Port Darwin; Brisbane); vol. 6, pt. 2, p. 248, 1882. —

Saville-Kent, Great Barrier Reef, pp. 299, 370, 1893 (Moreton Bay). — Stead, Fish. Australia, p. 64, fig. 26, 1907 (New South Wales; Queensland). — Roughley, Fishes of Australia, p. 31, 1916 (New South Wales; Queensland). — McCulloch, Fishes New South Wales, ed. 2, p. 31, pl. 10, fig. 110a, 1927 (Richmond and Clarence estuaries); Austral. Mus. Mem., no. 5, pt. 1, p. 104, June 29, 1929 (sampled).

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Hemirhamphus sclerolepis Ogilby, Edible
Fishes New South Wales, p. 175, 1893.
pl. 44,

Hemirhamphus krefti Steindachner,
Sitzs. Ber. Akad. Wiss. Wien, math.-
nat. Kl., vol. 56, pt. 1, p. 26, pl. 1, figs.
1-2, 1867 (type locality: Port Jackson).

Depth 6; head $3\frac{4}{5}$. Snout $2\frac{4}{5}$ in
head from snout tip; eye $4\frac{1}{2}$, $1\frac{4}{5}$ in
snout, $1\frac{1}{4}$ to $1\frac{1}{2}$ in interorbital; maxillary apparently not quite
reaching eye, length 3 in head from
snout tip; interorbital slightly convex.

Scales 48 to 53 in lateral series;
9 transverse.

D. 13 to 15, first branched ray 2
in total head length; A. I, 16 or II, 17,
first branched ray $2\frac{1}{8}$; caudal $1\frac{1}{3}$,
moderately forked, lower lobe longer;
least depth of caudal peduncle 4;
pectoral $1\frac{3}{4}$; ventral $2\frac{1}{2}$.

In life bright green above, head
darkest, pale green below. Sides
with broad well defined silvery bands.

Length 380 mm.

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(Ogilby.)

North Australia, Queensland,
New South Wales. Although originally
credited to New Zealand, the type
locality appears to be erroneous.

786. Agojo Point, Catangan Island.
June 10, 1909. Length 128 mm.

1, 2, 1318. Alibijaban Island.
March 6, 1909. Length 126 to 137 mm.

577, ~~578~~ 950, 951. Alimango Bay. March
5, 1909. Length 98 to 123 mm.

619. Bungsuk Island. January 5, 1909. Length 43 mm.
9659 and 9660. Cagayan, Sulu Island.

January 8, 1909. Length 125 to 133 mm.

266. Cagayanes Island. March 31,
1909. Length 118 mm.

1121 to 1123. Camino Island near Daet.

June 15, 1909. Length 150 to 158 mm.

1326. Calangaran Island. March 16, 1909.
Length 156 mm.

1027, 1225, 12096. Capunispugan Point,
Mindanao. May 10, 1908. Length 106 to 120 mm.

1204 and 1205. Capulaan Bay, Pagbilao
Island. February 24, 1909. Length 130 to 132 mm.

715. Caracaran, Batan Island.

June 8, 1909. Length 127 mm.

Metaphedalin new genus.

f. jaw not produced in back.

Hemishamphidol

Zenarchopterus basidensis

n. sp.

Wald. pp. 389-393

Melapedalion new ~~subgenus~~

~~Type Arctura~~
Type Oxyorhamphus brevis Seale.

Diagnosis. Known by its more or less uniform scales, not reduced or crowded before pectoral base, the ventral inserted ~~posteriorly~~ ^{ant} anteriorly, caudal well and unequally forked and each lobe of the vertical fins with black tips.

(Μέλας, black; ~~τέρμα, end;~~
πρῶταλιον, rudder; with reference to the black tipped vertical fins)
Melapedalion brevis (Seale)

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Depth $1\frac{1}{2}$ to $1\frac{2}{3}$; head $2\frac{3}{4}$ to $3\frac{1}{5}$, width $2\frac{1}{8}$ to $2\frac{2}{5}$. Snout $2\frac{3}{5}$ to $2\frac{3}{4}$ in head; eye $3\frac{1}{5}$ to $3\frac{2}{3}$, $1\frac{1}{4}$ to $1\frac{2}{5}$ in snout, greater than interorbital in young to $1\frac{1}{5}$ in interorbital with age; maxillary $\frac{1}{2}$ to $\frac{3}{5}$ in snout, $3\frac{3}{4}$ to $4\frac{1}{4}$ in head; interorbital $3\frac{1}{5}$ to $3\frac{3}{4}$, broadly convex. Gill rakers 4 + 11, short pointed, $4\frac{1}{2}$ in gill filaments, which $1\frac{3}{5}$ in eye.

Scales 29 or 30 between gill opening and caudal base; tubes 31 to 34 in lateral line; 7 or 8 scales above lateral line, 14 or 15 below. Scales with 10 to 24 basal radiating striae, and 1 to 3 incomplete auxiliaries; apical denticles 103 to 162, with 6 to 8 series of basal elements transversely; circuli fine.

D. XII or XIII, 23, I or 24, I, last spine $2\frac{1}{10}$ to $2\frac{2}{3}$ in head, thirteenth ray $1\frac{2}{5}$ to $1\frac{3}{4}$; A. III, 20, I, third spine $1\frac{2}{3}$ to 2, tenth ray $1\frac{3}{5}$ to $1\frac{2}{3}$; least depth of caudal peduncle 3 to $3\frac{1}{8}$; caudal $1\frac{1}{2}$ to $1\frac{3}{5}$, hind edge convex; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$.

Brown, little paler on sides below, opercle, breast and belly. Six oblique diffuse dusky lines to spinous dorsal, all parallel; from last line $1\frac{1}{2}$ oblique parallel lines slope towards anal. Broad black band from predorsal to eye, wider below on cheek and extend over lower surface

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Arzhamphus brevis (Seale)

Oxyporhamphus brevis Seale, Philippine
Journ. Sci., vol. 4, p. 495, pl. 2, 1910
(type locality: Paawacan, Palawan
Island, Philippines).

Arzhamphus brevis Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4,
p. 172, fig. 59, 1922 (no locality).

~~Arch~~
~~Crosamphus~~

Depth $6\frac{1}{4}$ to $7\frac{2}{3}$, moderately compressed, sides more or less flattened; head $3\frac{7}{8}$ to $4\frac{2}{5}$, width $2\frac{1}{3}$ to $2\frac{3}{4}$. Snout $2\frac{7}{8}$ to 3 in head from snout tip; eye $3\frac{3}{4}$ to 4, $1\frac{1}{4}$ to $1\frac{1}{3}$ in snout, 1 to $1\frac{1}{6}$ in interorbital; maxillary reaches $\frac{2}{3}$ to $\frac{3}{4}$ to eye, length 4 to $4\frac{1}{8}$ in head from snout tip; mandible but very slightly protruded before snout tip; interorbital $3\frac{1}{2}$ to $3\frac{4}{5}$ in head, ^{from snout tip} low, level. Gill rakers 8 + 17, lanceolate, $2\frac{1}{3}$ in gill filaments, which $1\frac{7}{8}$ in eye.

Scales 52 ~~to~~ 54 in axial lateral series from above gill opening to caudal base and 4 more on latter; 7 above lateral line to dorsal origin, 3 below to anal origin; 46 to 48 predorsal to front of snout of which 36 or vertical fins finely scaled. 37 extend to occiput. Scales with ^{0 to} 5 basal radiating striae; circuli fine, usually less distinct or absent apically.

D. II, 13, I or II, 14, I, first branched ray 15/6 to 2'15 in total

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head; A. II, 13, I, first branched
ray $2\frac{2}{5}$ to 3; caudal 1 to $1\frac{1}{8}$,
deeply forked, lower lobe little
longer; least depth of caudal
peduncle $3\frac{2}{3}$ to $4\frac{1}{2}$; pectoral
 $1\frac{1}{2}$ to $1\frac{3}{4}$; ventral $2\frac{1}{4}$ to $2\frac{3}{4}$,
origin midway between front or
hind pupil edge and caudal
base.

Back brown, below and under
surfaces paler with silvery
reflections. Sides of head more
or less bright silvery white, also

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iris. Snout above brown, like top of head. narrow silvery white lateral streak from above pectoral origin, expanded until about half vertical pupil diameter between dorsal and anal, bordered with neutral gray line above. Fins pale brown, anal and caudal still paler or even with pale yellowish tinge basally. Caudal lobes variably with black tips, usually lower more extensive. Front

dorsal and anal lobes, one
or other or both, ^{sometimes,} tipped with
black.

Philippines, East Indies.

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6385 to 6388. Mantaguin Bay,
Palawan. April 1, 1909. Length
143 to 233 mm.

6203 to 6208. Mantaguin Bay,
Palawan. April 2, 1909. Length 165
to 247 mm.

20614 to 20616⁷. Sirinao Island,
Hakoda Bay near Alphonso XIII.
December 30, 1908. Length 154 to
187 mm.

7821 to 7823. Ulugan Bay near
Baheli River mouth. December 28, 1908.
Length 198 to 230 mm.

5083. Sandakan Bay, Borneo.
March 1, 1908. Length 205 mm.

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Genus Dermogenys Van Hasselt.

Dermogenys Van Hasselt, Algem. Konst-
en Letterbode, vol. 1, p. 131, 1823
(type Dermogenys pusillus Van Hasselt,
monotypic).

Dermatogenys Peters, Monatsber. Akad.
Wis. Berlin, 1865, p. 163 (type
Dermogenys pusillus Van Hasselt).

Rhampodermogenys Fowler and Bean,
Proc. U. S. Nat. Mus., vol. 62, p. 15,
1922 (type Dermogenys bakeri
Fowler and Bean, orthotypic).

almost black. Black blotch between dorsal spines and some narrow oblique dark lines on front rays. Length 87 mm. (Mc Culloch.)

According to Mc Culloch another, in life, with head and front part of body deep pink, rest of body sage green. Dark blue line round lower and hinder eye edges, and 2 similar marks on cheeks. Dorsal bright green, margined with yellow and blue line; dark spot between spines and longitudinal series of spots near fin base. Anal like dorsal. Caudal sage green, with oblique scarlet and blue marginal band on each lobe.

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Body elongate, rather compressed.
Head rather large. Premaxillaries
form tapering plate, truncate in front.
Mandible extended as beak, without teeth
except space opposite premaxillaries.
Beak bordered each side by fold of
skin, projects horizontally and not
always visible in preserved specimens.
Small pointed teeth in both jaws. Gill
rakers short. Third upper pharyngeals
ankylosed. Scales moderate, rather
deciduous. Lateral line low, indistinct.
Dorsal shorter than anal, begins behind

anal origin. Anal without enlarged rays, though male sometimes front part of anal enveloped by swollen fold of skin, apparently outgrowth of genital papilla. Caudal rounded. Pectoral high, rather far behind gill opening. Ventral small, premedian, median or postmedian.

Small, fresh water half beaks, distributed in India, Siam, Malaya, East Indies and Philippines.

The following doubtful:

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Dermogenys brachynotus (Bleeker).

Hemiramphus brachynotus Bleeker,
Verh. Batav. Genoot. (hal. Ich. Bengal),
vol. 25, p. 29, ^{(73)146,} 1853 ^{type locality:} (Calcutta).

Hemiramphus brachynotus
Bleeker, Verh. Batav. Genoot. (hal.
Ich. Bengal), vol. 25, p. 146, 1853
(Hooghly River, Calcutta, India).

Hemiramphus brachynotus
Günther, Cat. Fish. Brit. Mus., vol.
6, p. 275, 1866 (copied). — Day,
Fishes of India, pt. 3, p. 517, 1877
(copied); Fauna British India,
Fishes, vol. 1, p. 428, 1889 (copied).

(49 according to description)

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Scales 56₁ in median lateral series to caudal base and about 14 more on latter; upper section of lateral line with 40 to 43 tubular scales, lower section with 11 to 12 to caudal base, ~~and~~ ^{and} ~~1 or 2~~ ^{1 or 2} ~~more~~ ^{more} on latter; 5 scales above lateral line, 14 below, 10 predorsal forward to interorbital, 6 rows on cheeks.

D. III, 35, to 37 (34, I on figure), third spine $3\frac{1}{8}$ in head, thirty second ray $1\frac{2}{5}$; A. III, 20, third spine 3, eighteenth ray $1\frac{1}{2}$; caudal $3\frac{1}{5}$ in combined head and body to caudal base, ends in median point behind; least depth of caudal peduncle $1\frac{1}{8}$ ^{in head}; pectoral $1\frac{1}{10}$; ventral $1\frac{2}{5}$.

Head and body dark brown, sides between pectoral fin tinged deep red. All fins except ventral very dark,

Depth 12, body elongated, compressed, little higher than wide; head $3\frac{1}{4}$. Snout $4\frac{2}{3}$ in length of body; eye 2 in postorbital, rather over 1 in interorbital; upper jaw rather wider than long, not long as eye; upper surface of head flat.

D. 9, first ray inserted over fifth anal ray; A. 15, base not twice that of dorsal, fin not lower than body, lower edge concave; caudal rounded.

(Day.)

India. Differs from all the known

species of the genus in its short
premaxillary so that triangular
upper jaw wider than long.

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Analysis of Species.

a.¹ Pectoral short, not nearly reaching ventral.

b.¹ Ventral origin nearer caudal than ~~head~~^{eye}; anal rays 14. pusillus.

b.² Ventral origin midway between head and caudal base; anal rays

15. sumatranus.
b.³ Ventral origin little nearer head than caudal base.

c.¹ Length of lower jaw beyond end of upper jaw $5\frac{2}{5}$ to $6\frac{1}{10}$ in length to caudal base; dorsal rays 9 or 10.

d.¹ Anal rays 15 or 16; scales 45 to 47. orientalis.

d.² Anal rays 17 to 19; scales 50. weberi.

c.² Length of lower jaw beyond end of upper jaw $7\frac{4}{5}$ to $8\frac{2}{5}$ in length to caudal base; dorsal rays 10 to 12; scales 54. obovatus.

Pseudochromis novae-hollandiae Steindachner

Pseudochromis novae-hollandiae Steindachner,
Sitzs. Ber. Akad. Wiss. Wien, vol. 80, pt. 1,
1879, p. 160. Port Denis [Port Denison],
New Holland. — McCulloch, Mem. Queensland
Mus., vol. 3, January 25, 1915, p. 48, pl. 16,
fig. 1 (Masthead Island).

? Polyacanthus queenslandiae Kent,
Great Barrier Reef, 1893, p. 308, pl. 16,
fig. 8. Adolphus Island, Torres Strait
[in color sketch].

Depth $3\frac{1}{3}$; head $3\frac{1}{2}$. Snout $4\frac{2}{3}$
in head; eye $3\frac{1}{3}$, greater than snout
or interorbital; maxillary reaches $\frac{1}{2}$
in eye, expansion $\frac{2}{1}$ ^{in eye}, length $2\frac{3}{5}$ in head;
band of villiform in front of each jaw,
becoming uniserial laterally in jaws,
1 or 2 strong canines each side of
symphysis; large patch of villiform
teeth on vomer, smaller one on palatines.

a. ² Pectoral reaching ventral, large.
pectoralis.

Dermogenys pusillus Kuhl and Van Hasselt

Dermogenys pusillus Kuhl and Van Hasselt,

Konst- en Letterbode, vol. 1, p. 131, 1823
(type locality: Batavia); Bull. Sci.

Nat. Geol. Ferrussac, vol. 2, p. 374, 1824
(Buitenzorg). — Bleeker, Atlas Ichth.

Ind. Néerl., vol. 6, p. 64, pl. () 253, fig.
2, 1866-72 (Java, Sumatra). — Bean

and Weed, Proc. U. S. Nat. Mus., vol. 42,
p. 595, figs. 1-^(anal fin)2, 1912 (Buitenzorg). —

Weber and Beaufort, Fishes Indo-Austral.
Archip., vol. 4, p. 140, 1922 (Buitenzorg,
Tjipanas, Situ Bagendit, Semarang,
Java; Upper Riko River, Borneo). —

Fowler and Bean, Proc. U. S. Nat. Mus., vol.
62, p. 14, 1922 (Zamboanga).

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Hemirhamphus viviparus Peters, Monats.
Akad. Wiss. Berlin, 1865, p. 132, Rio
Pasay, Samar). (type locality:

Hemirhamphus (Dermatogenys) viviparus
Peters, Monats. Akad. Wiss. Berlin,
1868, p. 273 (Rio Gasot, Luzon).

Hemirhamphus viviparus Bleeker, Atlas
Ichth. Ind. Néerl., vol. 6, p. 65, 1866-72
(copied). — Elera, Cat. Fauna Filip., vol. 1,
1895, p. 573, Samar).

Dermatogenys viviparus Fowler, Copeia,
no. 58, (June 18, 1918) p. 62, (Philippines);
Proc. Acad. Nat. Sci. Philadelphia,
1919, p. 10 (Philippines).

Hemiramphus fluviatilis Bleeker, Natuurk.
Tijds. Ned. Indië, vol. 1, p. 95, 1850
(1851) (type locality: Batavia; Tandjong
Cost; Buitenzorg; Tjampoa); Verh.
Batavia. Genoot. (Ned. Vissch.), vol.
24, p. 16, 1852 (same localities); Natuurk.

Tijds. Ned. Indië, vol. 7, p. 314, 1854
(Perdana); vol. 9, p. 393, 1855 (Lake at

Grati, Java); vol. 13, p. 476, 1857 (278)

(Buitenzorg), p. 477 (Tjipamas;
Tjiandjoer); vol. 16, p. 48, 1858
(Buitenzorg); Act. Soc. Sci. Ind.
Néerl., vol. 5, no. 6, p. 4, 1858-59

(Palembang, Sumatra); vol. 8 (Acht.
Sumat.) I, p. 55, 1859 (Palembang).

— Weber, Zool. Ergebn. Reise Ned. Ost
Ind., vol. 3, p. 456, 1894 (Sumatra;
Java). — Reichelt, Naturhaus, Dresden,
vol. 14, (1904) p. 118, (Malacca).

Hemirhamphus fluviatilis Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 275, 1866
(Java). — Károli, Termesz. Füzetek,
Budapest, vol. 5, p. 182, 1881 (Siam,
Santabug, Palaban, Sandanglajia,
Megamendok). — Elera, Cat. Fauna

Filipinas, vol. 1, p. 576, 1895 (Samar,
Borongan). — Duncker, Mitteil. Nat.
Mus. Hamburg, vol. 21, p. 147, 1903
text fig. (anal rays),

(1904) (Klang and Kuala Langat; Singapore).

— Volz, Naturk. Tijds. Ned. Indië, vol. 66, p. 180, 1907 (Palembang).

Hemirhamphus (Dermatogenys) fluviatilis
Peters, Monatsh. Akad. Wiss. Berlin,
1868, p. 272 (Rusa Kimbangan, Java).

(Acht. Sumat.), vol. 8, p. 55, 1859 (Palembang).

— Weber, Zool. Ergebn. Reise Ned. Ost
Ind., vol. 3, p. 456, 1874. (Sumatra;
Java).

Dermogenys bakeri Fowler and Bean

Dermogenys bakeri Fowler and Bean,
Proc. U. S. Nat. Mus., vol. 62, p. 15, fig.

3, 1922 (type locality: Zamboanga).—

Fowler, Proc. Acad. Nat. Sci. Philadelphia,
1927, p. 263 (Calapan, Philippines).

Depth ~~6 1/5~~ to 7 ^{3/4} ~~1 1/2~~; head 2 ^{1/3} ~~1 1/2~~

to ~~2 3/5~~ ^{2 3/5}, from upper jaw tip 3 ^{1/6} ~~1 1/2~~

to 3 ^{2/5} ~~1 1/2~~, width ~~2 1/3~~ ^{3 2/5} to ~~2 1/3~~ ^{1 1/3}, snout

2 ~~1 1/2~~ to 2 ^{1/4} in head measured

from upper jaw tip; eye ~~3 1/4~~ ^{4 1/5} to

4 ^{3/4} ~~1 1/2~~, 1 ^{7/8} ~~1 1/2~~ to 3 in snout, 1 to 1 ^{1/2} ~~1 1/2~~

in interorbital; maxillary

reaches eye, length $2 \frac{1}{4}$ to $2 \frac{1}{4}$
in head, ^{from snout tip} interorbital ~~3 2/5~~ ^{3 2/5} to $4 \frac{1}{5}$,

low, depressed concavely. Gill

rakers $2 + 10^7$, short weak points,

$\frac{1}{4}$ of gill filaments, which $\frac{1}{3}$ of

eye.

Scales $3 \frac{6 \text{ to } 39}$ in ~~axial~~ ^{axial} lateral

~~series~~ ^{series} to caudal base and ~~4~~ ^{5 or 6} more

on latter; $4 \frac{or 5}{1}$ scales above axial

lateral row, 5 to 7 below, 32 or

$3 \frac{31}{1}$ predorsal forward to occiput.

Scales with 5 to 12 basal radiating

striae; circuli complete, 18 to 20.

~~Depth $2 \frac{2}{3}$ to 2~~

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Lateral line incomplete, low,
not extended beyond ventral
base in small examples, in adults
not quite reaching anal.

D. II, 8, first branched ray
to III, 7,
^{1/5}
3 ~~1/2~~ to 4 ^{1/4} in total head

length; A. II, 13, second ray 3 ^{1/3}?
to ~~3 1/2~~ ⁴ 2 ^{1/3} to 2 ^{2/3},
caudal rounded behind;

least depth of caudal peduncle

5 ^{1/2} to 6; pectoral 2 ^{1/4} to 2 ^{3/5};

ventral 4 to 4 ^{1/3}, origin slightly

nearer caudal base than hind eye

edge.

Dull to pale brown, sides
and lower surface paler with

whitish or silvery tints. Back above with close set dark brown dots, arranged on predorsal as 3 parallel close set lines, median less distinct. Blackish spot, well contrasted, behind upper end of gill opening before pectoral origin. Iris grayish. narrow dark gray axial line, most distinct between dorsal and anal. Fins all pale, dorsal caudal and pectoral tinted pale brown, front of dorsal sometimes black.

~~Philippines. Heretofore known only from the type.~~

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Malaya, East Indies, Philippines.

Examination of the type of Dermatogenys
bakeri shows it to be a variant of
the present species, in which the
upper jaw somewhat longer than usual.

~~1 example. Caiholo River, Ulugan
Bay, Palawan. December 29, 1908.~~

~~Length 43 mm.~~

~~2 example [1680]. Zamboanga Canal.~~

~~October 8, 1909. Length ^{to 44} 38 mm.~~

~~U. S. N. M., no. 84275. Zamboanga.~~
~~Dr. F. Baker. Length 43 mm. Type.~~

1 example. Iwahig River and tributary, Palawan. April 4, 1909. Length 65 mm.

1 example. Caiholo River, Ulugan Bay, Palawan. December 29, 1908. Length 43 mm.

1 example. Malampaya River, Palawan. December 26, 1908. Length 40? mm.

2⁷ examples. Mariguina River, at Uana. January 1, 1908. Length 22 to 73 mm.

17 examples. Bahoda Bay, Palawan. December 31, 1908. Length 31 to 60 mm.

1 example. Parcol, Malampaya Island. December 25, 1908. Length 46 mm.

69 examples. Pangauron River, Port Caltow. December 16, 1908. Length 30 to 81 mm.

3 examples. Kato River, Lagonoy Gulf, Luzon. June 18, 1909. Length 65 to 104 mm.

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8 examples. Stream near village at
Chase Head, Endeavour Strait,
Palawan. December 22, 1908. Length
45 to 63 mm.

1 example. Ulugan Bay, Palawan.
From among arms of Comantheria nobilis.
Length 36 mm.

2 examples. [1680]. Zamboanga Canal.
October 8, 1909. Length 38 to 44 mm.

1 example. Zamboanga. October 9, 1909.
Length 53 mm.

U. S. N. M., no. 72568. Java.
O. C. Bryant and Wm. Palmer. Length
32 mm.

U. S. N. M., no. 72569. Java.
O. C. Bryant and Wm. Palmer. Length
35 mm.

U. S. N. M., no. 72570. Buitenzorg, Java.
April 3, 1909. O. C. Bryant and Wm. Palmer.
Length 33 to 47 mm. 4 examples.

U. S. N. M., no. 72571. Buitenzorg,
Java. April 3, 1909. O. Bryant and
Wm. Palmer. Length 30 to 36 mm.
4 examples.

U. S. N. M., no. 72572. Buitenzorg,
Java. March 10, 1909. O. Bryant and
W. Palmer. Length 37 to 46 mm.
9 examples.

U. S. N. M., no. 84273. Zamboanga.
Dr. F. Baker. Length 45 mm.

U. S. N. M., no. 84275. Zamboanga.
Dr. F. Baker. Length 43 mm. Type of
Dermatogenys bakeri.

Dermogenys sumatranus (Bleeker)

Hemiramphus sumatranus Bleeker,

Natuurk. Tijds. Nederl. Indië, vol. 5,
p. 526, 1853 (type locality: Lake
Maninjau, Sumatra); Act. Soc.
Sci. Ind. Néerl. (Richt. Sumat.),

vol. 8, p. 55, 1859 (Maninjau Lake).

↑ — Károli, Termész. Füzetek, Budapest, 1881
vol. 5, p. 182, 1881 (Change).

Hemiramphus sumatranus Günther,
Cat. Fishes Brit. Mus., vol. 6, p. 275,
1866 (type). — Volz, Natuurk. Tijds.

Nederl. Indië, vol. 66, p. 180, 1907
(Palembang).

Dermogenys sumatranus Bleeker, Nederl.

Tijds. Dierk., vol. 3, p. 167, 1866
(); Atlas Ichth. Ind.

Dermogenys sumatranus (Bleeker)

Hemiramphus sumatranus Bleeker,

Natuurk. Tijds. Nederl. Indië, vol. 5, p. 526, 1853 (type locality: Lake Maninjau, Sumatra); Act. Soc. Sci. Ind. Néerl. (Richt. Sumat.),

vol. 8, p. 55, 1859 (Meninjau Lake).

→ Weber, Zool. Ergebn. Reise Ned. Ost Ind., vol. 3, pp. 427, 456, 1894

(Sumatra). — Elera, Cat. Fauna Filipinas, vol. 1, p. 576, 1895 (Luzon, Rio Lonaten, Morong).

• Hemiramphus sumatranus Günther, Cat. Fishes Brit. Mus., vol. 6, p. 275, 1866 (type). — Volz, Natuurk. Tijds.

Nederl. Indië, vol. 66, p. 180, 1907 (Palembang).

Dermogenys sumatranus Bleeker, Nederl.

Tijds. Dierk., vol. 3, p. 167, 1866 (); Atlas Ichth. Ind.

with a leathery skin
usually firm and the nervous system
better developed than in amphibians
numerous extinct forms are known

→ vol. 8, p. 5
— Weber,
Cat Ind.,
Sumatra)
vol. 1, p. 576, 1897
— Temminck
Cat. Fish.

Néerl., vol. 6, p. 65, pl. (7), fig. 1
(Lake Meninjau, Sumatra). —

Weber and Beaufort, Fishes Indo-
Austral. Archip., vol. 4, p. 139, 1922
(Fort de Kock, Andalas, Bagan
Api Api, Sumatra; Balikpapan,
Borneo).

Depth $8\frac{2}{3}$; head $2\frac{3}{4}$. Snout $2\frac{1}{2}$
in head from snout tip; eye $3\frac{1}{2}$,
 $1\frac{1}{2}$ in snout, 1 in interorbital;
maxillary apparently nearly reaches
eye, nearly long as snout; mandible
before snout $1\frac{7}{8}$ in rest of head;
teeth conic, simple; interorbital
very low.

Scales 45 in lateral series.
(about 38 on figure and 5 shown
above lateral line to dorsal origin).

D. II, 8 (I, 8 on figure), fin height
 $5\frac{4}{5}$ in total head length; A.
II, 14 (I, 11 on figure), fin height

$3\frac{3}{5}$; caudal $2\frac{1}{2}$, convex behind;
least depth of caudal peduncle
 $6\frac{3}{4}$; pectoral $2\frac{1}{5}$, rays I, 9;
ventral $4\frac{1}{2}$ in total head length,
rays I, 5, reaches $1\frac{1}{4}$ to anal.

Brownish green. No silvery
lateral band. Dorsal, pectoral and
ventral yellowish. Caudal brown.
Anal yellowish. Length 75 mm.
(Bleeker.)

East Indies, Philippines. Bleeker
says it resembles Dermogenys
brachynotopterus Bleeker, but
that species differs in its short
premaxillary broader than long,
while in the present species
longer than broader.

slightly paler than above. Iris dull neutral gray. Caudal light yellowish to dusky. Dorsals, anals and ventrals all more or less dusky, variably little paler. Dorsals and anals with 6 or 7 longitudinal pale lines extending usually whole length of fin, often variously broken as spots or bars. Pectoral pale, uniform, usually with black basal blotch transversely covering whole base and with whitish or gray adjoining shade on outer border; blotch very variable, from almost black to nearly absent.

India, Andamans, East Indies, Philippines, Queensland, Melanesia, Micronesia. The best known species of the family, very well marked, but variable. Chiefly distinguished by the blackish blotch at the pectoral base and the

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Dermogenys orientalis (Weber)

Hemiramphus orientalis Weber, Zool.

Ergebn. Reis Ned. Ost Ind., vol. 3, p.

427 (456), 1894 (type locality: Luwu,

Celebes.)

Hemiramphus orientalis Boulenger,

Proc. Zool. Soc. London, 1897, p. 429

(Kalaena River, Toka River near Paloppo,
stream between Ewehang and Batulappa,
central Celebes; Macassar, south Celebes).

↓ Dermogenys orientalis Weber and Beaufort,

Fishes Indo Austral. Archip., vol. 4, p.

137, fig. 52, 1922 (Meridan River, Borneo;
Moros, Tempe, Luwu, Celebes).

Depth $6\frac{4}{5}$ to $7\frac{4}{5}$, body somewhat compressed; head from upper jaw tip $2\frac{1}{2}$ to $2\frac{4}{5}$ in trunk. Triangular part of upper jaw truncate in front, larger than wide; eye $1\frac{1}{3}$ to 2 in postorbital, less than interorbital; length of lower jaw beyond end of upper somewhat more than 6 in length without caudal; teeth small, pointed; preorbital rounded, about $\frac{1}{2}$ of eye.

Scales 45 to 47 in lateral series.

D. 9 or 10, origin above fifth or sixth anal ray, fin higher than anal; A. 15 or 16, rounded like dorsal; caudal rounded; P. I, 9, inserted rather far behind gill opening, as long as space between mouth corner and gill opening or little larger; V. I, 5, about half long

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Pseudochromis rodwayi Johnston

Pseudochromis rodwayi Johnston, Proc. Roy. Soc. Tasmania, 1902 (1903), p. 6. Macquarie Harbor, Tasmania.

Depth 5 (in total); head $4\frac{1}{2}$. Body and head rather compressed, more or less elongate; eye lateral, greater than snout, nearly equals interorbital; mouth cleft slightly oblique, lower jaw protruding; front of both jaws with well curved canines, 3 lower stronger; narrow bands of small canines on vomer and palatines; opercle without spines; preopercle entire.

Scales moderate, ciliated, 50? in lateral series, 11 transversely; lateral line interrupted.

D. III, 26 or 27, produced posteriorly, half of anterior portion undeveloped or rudimentary, enveloped for most part in somewhat thick opaque integument; A. III, 17, produced

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as pectoral, base little nearer head than caudal.

Yellowish, with fine dark lateral line on body, accompanied on posterior part of body by faint indication of silvery lateral band. Length 78 mm. (Weber and Beaufort.)

East Indies.

ventral brown to slate. Along hind eye edge narrow dusky border. Dorsals and anals brown to dusky marginally, with 5 to 7 pale longitudinal lines, usually most contrasted on soft fins. Caudal usually yellowish, becomes dusky terminally, often upper and lower borders broadly whitish, sometimes fin uniformly dark. Paired fins always pale or yellowish.

Andamans, East Indies, Philippines. Though closely related to Pseudochromis fuscus my examples always distinguished by the yellowish or pale ventrals. While quite variable the extremes are far less than in Pseudochromis fuscus, the species always uniformly more pale. In alcohol many specimens are quite light or yellowish white to uniformity. They intergrade in color into the darker examples.

8 examples. Chase Head in stream near village, Endeavour Strait, Palawan. December 22, 1908. Length 43 to 65 mm.

One example. Iwahig River tributary, Palawan. April 4, 1909. Length 60 mm.

One example. Malampaya River, Palawan. December 26, 1908. Length 45? mm.

31 examples. Mariguina River at Uaua. January 1, 1908. Length 18 to 70 mm.

18 examples. Saboda Bay, Palawan. December 31, 1908. Length 31 to 60 mm.

One example. Pancol, creek at head of tide water, Malampaya Island. December 25, 1908.

69 examples. Pangauron River, Port Caltom. December 16, 1908.

4 examples. [556.] Cataingan Bay,
Masbate. April 18, 1907. Length 67 to 76 mm.
Largest without dark basal blotch to
pectoral base. Most have yellowish caudals.

9784. Caxisigan Island, north Balabac
Strait. January 2, 1909. Length 54 mm.

10835. Dalaganem Island, Palawan.
~~January~~ April 8, 1909. Length 75 mm.

15663. Mactan Island. March 25, 1909.
Length 61 mm.

21100 [1646]. Maculabo Island.
June 14, 1909. Length 70 mm.

4 examples. Morongas Island, Jolo.
Shore coral heads. February 10, 1908.
Length 38 to 62 mm.

22200, 22201. Pangasinan Island,
Jolo. February 13, 1908. Length 69 to 75 mm.

8975. Porongpong Island, Palumbanes
Group. June 10, 1909. Length 72 mm.

Length 30 to 79 mm.

One example. Ulugan Bay, Palawan. From among arms of large specimen of Comanthina nobilis.

Length 37.7 mm.

One example. Zamboanga canal. October 8, 1909. Length 42 mm.

One example. Zamboanga river. October 9, 1909. Length 51 mm.

blackish ventrals at all ages). The caudal as well as the general body coloration is subject to considerable variation in shades of brown, often the former may even be yellowish or variously white bordered with a darker center.

~~Following description is accepted Pseudochromis modestus Müller and Troschel and P. xanthochi Bleeker as synonyma.~~

22113. Alimango Bay, Burias Island. March 5, 1909. Length 75 mm.

1 example. Biri Channel, Luzon. June 2, 1909. Length 54 mm.

15033. Busin Harbor, Burias Island. March 7, 1909. Length 68 mm.

7854. Candaraman, ^{Islands,} North Balabac Strait. January 4, 1909. Length 57 mm.

1 example. Casagoran, Malbon Island. July 27, 1909. Length 68 mm. Caudal yellowish.

Dermogenys weberi (Boulenger)

Hemiramphus weberi Boulenger,
Proc. Zool. Soc. London, 1897, p. 429,
pl. 28, fig. 4 (type locality: Lake
Matanna, south east Celebes).

Hemiramphus weberi Weber, Bijdr.
Dierk. Amsterdam, af. 19, p. 202, 1914
(Soroako at Matano Lake, south east Celebes).

Dermogenys weberi Weber and Beaufort,
Fishes Indo Austral. Arch., vol. 4, p.
138, 1922 (Lake Matanna, Celebes).

Depth 8; head $2\frac{1}{3}$. Snout $2\frac{2}{3}$ in head from snout tip; eye $4\frac{1}{4}$, $1\frac{3}{4}$ in snout, 1 in interorbital; premaxillary apparently reaches eye or long as snout, upper jaw width less than its length; interorbital low, flat.

Scales 50 in medial lateral series (about 56 on figure); 9 above anal base to dorsal origin).

D. 9, fin height $3\frac{1}{2}$ in total head length; A. 19, fin height $3\frac{7}{8}$; caudal $3\frac{1}{4}$, rounded (slightly emarginate on figure); least depth of caudal peduncle about equals eye; pectoral $2\frac{4}{5}$ in total head length; ventral $4\frac{4}{5}$, reaches $1\frac{1}{3}$ to anal.

Blackish above, silvery on sides and below. Fins white. Pectoral black at base. Ventral black at tip.

ventral reaches $\frac{1}{2}$ to anal. Olivaceous,
 back darker. Snout and vertical
 fins blackish. Length 90 mm.
 (Regan, Barnard.)
 Natal coast. Said to be olive pink in
 life.

Length 90 mm.

(Boulenger.)

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Celebes. According to Weber and
Beaufort, D. 9 or 10, A. 17 to 19;
lateral line about 50.

Pseudochromis natalensis Regan

Pseudochromis natalensis Regan, Ann.

Durban Mus., vol. 1, pt. 3, 1916, p. 167.

Durban, Natal. — Gilchrist and Thompson,
Ann. Durban Mus., vol. 1, pt. 4, 1917, p. 347

(reference). — Barnard, Ann. South African
Mus., vol. 21, pt. 2, October 1927, p. 493

(Natal).

Depth $3\frac{3}{4}$; head $3\frac{3}{4}$. Snout 4 in head;
eye 4, equals snout, greater than interorbital;
maxillary reaches $\frac{1}{2}$ in eye; jaws equal;
interorbital 6 in head. Gill rakers 10
on lower branch of first arch. Scales 48 in
lateral series, 2 above, 13 below, 4 or 5
rows on cheek. D. III, 26, third spine
largest, 4 in head, soft fin rounded
posteriorly, when depressed reaches
caudal; A. III, 17, second spine subequal
but stronger than third, $\frac{3}{5}$ of eye;
caudal rounded; pectoral $1\frac{1}{2}$ in head;

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Dermogenys ebrardti (Poeta)

Hemiramphus (Dermatogenus) ebrardti

Poeta, Notes Leyden Mus., vol. 24, pts.

3-4, p. 187, 1912 (type locality: Kabaena,

Penango and Rumbia Ebene, south east Celebes).

Dermogenys ebrardti Weber and Beaufort,

Fishes Indo Austral. Archip., vol. 4, p.

139, 1922 (type; Kabaena, Penango, Rumbia

valley, south east Celebes).

Depth 5 to 5 1/2 in length without

projecting part of lower jaw, body

compressed; head to upper jaw tip 2 1/5

to $2\frac{5}{8}$ in trunk. Triangular part of snout longer than wide; eye nearly 2 in postocular, $1\frac{1}{5}$ to $1\frac{1}{2}$ in interorbital; length of lower jaw before end of upper jaw $7\frac{3}{5}$ to $8\frac{2}{5}$ in length of body to caudal base; teeth small, pointed.

Scales 54 in lateral series.

D. 10 to 12, origin above fourth anal ray, fifth ray longest or somewhat less than second and longest anal ray; A. 15, caudal rounded; P. 12, $6\frac{1}{4}$ to 7 in length with caudal, twice long as ventral; V. 6, base little nearer head than caudal.

Yellowish in alcohol. Dark blotch at pectoral base. Length about 90 mm. (Weber and Beaufort.)

Celebes.

posteriorly; pectoral rays 17.
uniform dark brown.

Known from the type, 95 mm. long. (Johnston.)

Chromogenys pectoralis new species.

Depth $5\frac{1}{2}$ to $5\frac{3}{5}$; head $2\frac{2}{5}$ to $2\frac{1}{2}$, from upper jaw tip 3 to $3\frac{1}{5}$, width $2\frac{7}{8}$ to $3\frac{1}{10}$. Snout tip to eye $2\frac{1}{4}$ to $2\frac{2}{5}$ in head from snout tip; eye $1\frac{2}{3}$ to $1\frac{3}{4}$ in snout, $3\frac{1}{2}$ to 4 in head, 1 to $1\frac{1}{8}$ in interorbital; maxillary reaches opposite front eye edge, length $2\frac{1}{4}$ to $2\frac{2}{5}$ in head from snout tip; interorbital $2\frac{7}{8}$ to $3\frac{1}{2}$, low, slightly concave. Gill rakers $1 + 9$ low points, $\frac{1}{4}$ of gill filaments, which 2 in ~~gill~~ eye.

Scales 40 , ^{or 41} in axial lateral series to caudal base and 5 more on latter; 16 transversely from front of anal sheath to dorsal origin, 36 or 37 predorsal forward to occiput. Scales small and more or less crowded about edges of body and on caudal. Scales with 5

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or 6 basal radiating striae; circuli
18 to 20, complete.

D. II, 8, first branched ray $3\frac{7}{8}$
to $3\frac{1}{8}$ in total head length; P.A.
III - 8, third branched ray 4 to $4\frac{1}{5}$;
caudal $2\frac{1}{5}$ to $2\frac{1}{3}$, rounded behind;
least depth of caudal peduncle $4\frac{3}{4}$
to $4\frac{4}{5}$; pectoral $1\frac{3}{4}$ to $1\frac{4}{5}$, reaches
to or slightly beyond ventral origin;
ventral $3\frac{2}{3}$ to $3\frac{3}{4}$

Largely uniform brownish, Iris
pale, evidently silvery when fresh.
Fins all brownish, hind caudal
portion with narrow submarginal
blackish line.

Diagnosis. Unique in the large
pectoral, which extends far back
as ventral. Upper jaw also nearly
^{to quite} half length of beak as measured to
the eye. Front simple rays of anal
firm, set off and forward with basal
scaly sheath, all much shorter than
lobes of branched rays. Lateral line
low and rather indistinct after ventrals.

U. S. N. M., No.

Bubucan.

December 19, 1907. Largest example 46 mm, type and 3 others, 20 to 42 mm, paratypes. In smallest example beak quite shortened to lower jaw but little more an eye diameter, also its pectoral not quite reaching anal.

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Genus Euleptorhamphus Gill

Euleptorhamphus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1859, p. 156. (Type Euleptorhamphus brevoorti Gill = Hemiramphus viridis Van Hasselt, monotypic.)

Body elongate, very slender, compressed, more or less band like. Head compressed, sloping below so its lower edge quite narrow or even keel like. Snout short, but little longer than wide. Eye nearly circular, advanced, high. Mandible greatly prolonged as slender beak. Teeth minute, in bands in jaws. Nasal cavity large, close before eye, flap large. Interorbital flat, like most of upper surface of head. Gill rakers lanceolate, numerous. Scales narrowly exposed, loose. Lateral line low. Dorsal moderate, posterior. Anal like dorsal, similar. Caudal well forked, lower lobe longer.

Pectoral very long, falcate, reaches half way or more to ventral. Ventral small, inserted little nearer caudal base than pectoral origin.

Apparently a single widely distributed species in most tropical or subtropical seas.

Euleptorhamphus viridis (Van Hasselt).

Hemiramphus viridis Van Hasselt, Bull. Sci. Nat. Géol., Ferrussac, vol. 2, p. 374, 1824 (on Kuddera C. Russell, Fishes of Coromandel, vol. 2, p. 62, pl. 178, 1803, type locality: Vizagapatam).

Hemi-Ramphus longirostris Cuvier, Règne Animal, ed. 2, vol. 2, p. 286, 1829 (on Kuddera C. Russell).

Hemiramphus longirostris Valenciennes,
Règne animal, Ill., Poiss., pl. 98,
fig. 2, 1839; Hist. nat. Poiss., vol.
190, p. 52, 1846 (Pondicherry). —

Bleeker, Verh. Batavia. Genoots. (Beng.
Hind.), vol. 25, p. 8, 1853.

Hemiramphus longirostris Günther,
Cat. Fishes Brit. Mus., vol. 6, p. 276,
1866 (copied). — Day, Fishes of India,

pt. 3, p. 513, 1877. — Jordan and Gilbert,
Bull. U. S. Nat. Mus., no. 16, p. 377, 1882
(compiled). — Day, Fauna Brit. India,

Fishes, vol. 1, p. 423, 1889. — Günther,
Journ. Mus. Godeffroy, vol. 8, pt. 16,
p. 358, 1909 (Hawaii; Open sea).

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Euleptorhamphus longirostris Putnam,
Proc. Boston Soc. Nat. Hist., vol. 13,
1870, p. 239 (Kawaihee, Hawaii;
Wentucket, Massachusetts). — Jenkins,

Bull. U. S. Fish Comm., vol. 22, p. 434,
1902 (1903) (Honolulu). — Snyder, Bull.

U. S. Fish Comm., vol. 22, p. 522, 1902 (1904).
(Honolulu). — Jordan and Evermann,
Bull. U. S. Fish Comm., vol. 23, p. 128,
fig. 43, 1903 (1905) (Honolulu). —

Jordan and Richardson, Mem. Carnegie Mus.,
vol. 4, p. 176, 1909 (on Jordan and Evermann).

— Jordan, Tanaka, Snyder, Journ. Coll. Sci.
Tokyo, vol. 33, art. 1, p. 109, 1913 (compiled).

— Izuka and Matsuura, Cat. Zool. Spec.
Tokyo Mus., Vertebr., p. 166, 1920 (Inatori,
Izu). — Barnard, Ann. South Afr. Mus.,

vol. 21, pt. 1, p. 264, June 1925 (Wallfish Bay).

— McCulloch, Fishes of New South Wales,
p. 31, pl. 10, fig. 109a, 1927. — Fowler, Mem.
Bishop Mus., vol. 10, p. 74, 1928 (Hawaiian Islands; Honolulu).

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Euleptorhamphus longirostris Jordan and
Evermann, Proc. U. S. Nat. Mus., vol. 25,
p. 329, 1902 (Formosa).

Hemiramphus macrorhynchus Valenciennes,
Hist. Nat. Mus., vol. 19, p. 55, 1846 (type
locality: Open sea, lat. 7° S., long. 177° W.;
Peyster Island, Polynesia).

Hemiramphus macrorhynchus Valenciennes,
Hist. Nat. Poiss., vol. 19, pl. 556, 1846.

Hemiramphus macrorhynchus Günther,
Cat. Fishes Brit. Mus., vol. 6, p. 276, 1866
(copied). — Cope, Proc. Acad. Nat. Sci.
Philadelphia, 1870, p. 121 (Atlantic City,
N. J.).

Hemiramphus (Euleptorhamphus) macrorhynchus
Steindachner, Denks. Akad. Wiss. Wien,
vol. 70, p. 511, 1901 (South Sea).

Euleptorhamphus macrorhynchus Putnam,
Proc. Boston Soc. Nat. Hist., vol. 13, p. 239,
1870 (Cayenne, Guiana; unknown locality).

Seale, Occas. Pap. Bishop Mus., vol. 1, no. 5,
p. 19, 1902 (Honolulu).

Euleptorhamphus brevoorti Gill, Proc. Acad. Nat. Sci. Philadelphia, 1859, p. 56 (type locality: not given).

Euleptorhamphus brevoortii Fowler, Proc. Biol. Soc. Wash., vol. 33, p. 155, Dec. 30, 1920 (Atlantic City record); Proc. Acad. Nat. Sci. Philadelphia, 1920, p. 386 (March 4, 1921) (Cape May, N.J.).

Euleptorhamphus velox Poey, Synop. Cuba, 383, 1867 (type locality: Cuba). — Putnam, Proc. Boston Soc. Nat. Hist., vol. 13, p. 240, 1870 (reference). — Fowler, Rep. New Jersey State Mus., p. 209, 1905 (1906) (Cope's example); p. 288, ^{pl. 94,} 1906 (1907).

Hemirhamphus elongatus Tanaka, Fig. Deser. Fishes of Japan, vol. 2, p. 22, pl. 6, fig. 2, June 15, 1911 (type locality: Misaki, Sagami).

Depth $16\frac{3}{5}$, well compressed, flattened sides little convergent below; head 3, head from snout tip 7, width $3\frac{1}{8}$. Snout 3 in head from snout tip; eye $3\frac{3}{5}$, $1\frac{1}{5}$ in snout, slightly greater than interorbital; maxillary reaches $\frac{3}{4}$ to eye, length $3\frac{7}{8}$ in head from snout tip; interorbital $3\frac{3}{4}$, flat. Gill rakers 8 + 25, lanceolate, slender, $\frac{1}{2}$ of gill filaments which $2\frac{2}{5}$ in eye.

Scales (pockets) 106? in axial lateral series from gill opening to caudal base; 6 above, 2 below, 60? predorsal forward to occiput. Dorsal and anal scaleless, caudal base with small scales (pockets). Scales without ^{basal} striae; circuli as fine parallel vertical striae, 75 or 76 basal, 23 to 25 apical, rarely continuous in

Pectoral bright chrome basally,
terminal $\frac{2}{3}$ dusky hyaline. Ventral
dusky sulphur yellow.

565, 566. Tataan, Simalue Island.

February 20, 1908. Length 128 to 130 mm.

530, 531. Usada Island. March 5,

1908. Length 130 to 133 mm.

10437, 10439. Varadero Bay, Mindoro.

July 23, 1908. Length 125 to 130 mm.

2112. Cape Kait, ~~Libani~~ ^{Libani} Bay, Celebes.

December 29, 1909. Length 47 mm.

52323 U.S.N.M. Apia, Samoa. Bureau

of Fisheries. Length 138 to 148 mm. 4 examples.

median vertical axis.

D. II, 20, fin height $4\frac{4}{5}$ in
head from mandible tip; A. II, 20,
first branched ray $4\frac{1}{2}$; caudal
(damaged) forked; least depth
of caudal peduncle $15\frac{3}{4}$?; pectoral
 $7\frac{1}{8}$?; ventral $9\frac{1}{2}$?

Back and upper surfaces
pale brown, sides and below
more or less bright silvery white.
Iris silvery white. Beak pale.
Fins all very pale or light
brownish.

South Africa, India, Formosa,
Japan, Polynesia, Hawaii. Also
in the Atlantic from New Jersey
and Massachusetts. The usual specific name

776 and 777. Jolo. March 6, 1908. Length
73 to 107 mm.

888 to 891. Jolo. March 7, 1908. Length
80 to 122 mm.

... .. becomes
widest pupil in vertical portion;
then band of greenish yellow, somewhat
narrower than black and continuous
with greenish of spinous fin; pinkish
blotch covers upper portion of scaled
region of soft dorsal. Anal dull
orange, edge sulphur yellow including
most of first 2 spines, then adjoining
submarginal pearl gray narrow line
and black or yellow of vertical
margin. Caudal bright chrome, edge
width of pupil behind hyaline,
then submarginal yellow band equally
wide followed by black band nearly
equal to eye at widest portion.

The usually accepted name for
this species, from Hemiramphus
longirostris Cuvier 1829, gives place
to the earlier Hemiramphus viridis
Van Hasselt 1824.

A. N. S. P., no. 22443. Atlantic City, N. J. Edward S. Keed. Length 394 mm.

A. N. S. P., one example. Honolulu, Hawaiian Islands. J. W. Thompson. Bishop Museum. Length 380 mm.

A. N. S. P., two examples. Honolulu. J. W. Thompson. Bishop Museum (45) Length 376 to 433 mm.

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Genus Hemirhamphodon Bleeker

Hemirhamphodon Bleeker, Nederl. Tijds.
Dierk., vol. 3, p. 140, 1866. (Type
Hemirhamphus phairosoma Bleeker, orthotypic.)

Body elongate, compressed. Head long. Triangular upper jaw longer than wide. Eye large. Mandible extended into beak, which furnished with small pointed teeth; with lateral horizontal fold of skin on each side, especially developed in part opposite upper jaw and not always conspicuous in preserved specimens. Gill opening wide. Gill rakers short. Scales very small. Dorsal posterior, well in advance of anal and much longer. Caudal rounded. Pectorals placed rather low, moderate. Ventrals variably shorter or longer than pectoral, before or behind dorsal origin.

Fishes living in brackish waters, in Malaya and East Indies.

Key

3 species

Analysis of species 3 species

a¹: D. 15 to 17; ventral origin before dorsal origin. Progonognathus.

a²: D. 21 to 23; ventral origin behind dorsal origin. Phaiosoma.

3 species

0 to 2 more on latter; 2 to 4 scales above lateral line, 9 to 12 below, 11 to 20 predorsal forward opposite front eye edge, 3 or 4 rows on cheek to preopercle ridge and flange naked. Scales with 12 to 15 basal radiating striae; apical denticles 45 to 68; circuli very fine.

D. III, 26, I, or 27, I, of which half or more of anterior rays simple, third spine $3\frac{1}{5}$ to 5 in total head length, fourth ray $1\frac{4}{5}$ to $2\frac{1}{4}$; A. II or III, 14, I, second or third spine $2\frac{4}{5}$ to $3\frac{1}{4}$, fourth ray 2 to $2\frac{1}{8}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, rounded convexly behind; least depth of caudal peduncle $1\frac{3}{4}$ to $1\frac{7}{8}$; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$.

Brown, paler on lower surfaces of head and body. Slightly darker horizontal bands, ill defined, follow in courses of scales on body. Iris

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Hemiramphus^{don} pogonognathus (Bleeker)

Hemiramphus pogonognathus Bleeker,
Nat. Tijds. Nederl. Indië, vol. 5,
p. (176) 193, 1853 (type locality:
Marawang, Banca); vol. 13, p. 284,
1857 (Tjirutjap, Biliton). — Weber,

Zool. Ergebn. Reise Ned. Ost Ind., vol. 3,
p. 456, 1894 (Banca; Biliton). —

Volz, Zool. Jahrb. Syst., vol. 19, p. 394,
1903 (Sumatra); Rev. Suisse^{zool.}, vol.
12, p. 472, 1904 (Sumatra).

Hemiramphus pogonognathus Günther,
Cat. Fishes Brit. Mus., vol. 6, p. 273,
1866 (type). — Károli, Termesz. Füzetek,
Budapest, vol. 5, p. 182, 1881 (Sarawak).

— Duncker, Mitteil. Nat. Mus. Hamburg,
vol. 21, p. 170, 1903 (1904) (Kuala Lumpur,
Kual Jelai, Muar River). — Volz,

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Nat. Tijds. Ned. Indië, vol. 66, p. 179,
1907 (Palembang).

Hemirhamphodon pogonognathus Bleeker,
Nederl. Tijds. Dierk., vol. 3, p. 169,
1866 (Banka; Billiton); Atlas Ichth.

Ind. Néerl., vol. 6, p. 66, pl. () 254, fig.
1, 1866-72 (Banka; Billiton). — Weber
and Beaufort, Fishes Indo Austral.
Arch., vol. 4, p. 144, fig. 54, 1922
(Taluk, Gunung Sahilan, Sumatra).

Hemirhamphodon busenthali Steindachner,
Abhand. Senckenberg. Ges. Frankfurt,
vol. 25, p. 450, pl. 17, fig. 2, 1900 (1901).
(type locality: Baram River, Borneo).

Depth 10 to $10\frac{2}{5}$; head $2\frac{1}{4}$. Snout $2\frac{1}{4}$
in head from snout tip; eye $2\frac{1}{4}$,
 $1\frac{4}{5}$ in snout, 1 in interorbital;
maxillary apparently nearly reaching
eye; lower jaw extends beyond end
of upper jaw $1\frac{4}{5}$ in rest of head;
interorbital very low.

Fowler

See note on
bottom of
p. 318

Scales 94 to 100 in lateral series.

D. 15 to 17, fin height $6\frac{3}{5}$ in total head length; A. 6 or 7, fin height $3\frac{7}{8}$; caudal $2\frac{2}{3}$, rounded; least depth of caudal peduncle subequal with eye; pectoral rays I, 7 or I, 8, fin 4 in total head; ventral $3\frac{3}{4}$, rays I, 5, fin reaches $1\frac{1}{5}$ to anal.

Dark brown above, lighter below. Dark patch on opercle. Fins more or less dark, dorsal with dark border. Length 189 mm. (Weber and Beaufort.)

Malaya, East Indies.

For Fowler.

Note: - Specimens in U.S.N.M., no. 94421.

G. Myers

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Hemirhamphodon phaiosoma (Bleeker)

Hemiramphus phaiosoma Bleeker,
Natuurk. Tijds. Nederl. Indië, vol. 3,
p. (88, 89) 99, 1852 (type locality:
Tjirutjup River, Blitong, Billiton);

Verh. Batavia. Genoot. (Snoek. Vissch.),
vol. 24, p. 26, 1852 (Blitong, Billiton
Island and Tjirutjup River).

Hemiramphus phaiosoma Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 272, 1866
(type). — Károli, Termesz. Füzetek,
Budapest, vol. 5, p. 182, 1881 (Varangoon,
Palandok, Sadong, Matang).

Hemiramphus phaiosoma Weber, Zool.
Ergebn. Reise Ned. Ost Ind., vol. 3,
p. 456, 1894 (Banka; Billiton).

Hemirhamphodon phaiosoma Bleeker,
Ned. Tijdsch. Dierk., vol. 3, p. 168, 1866
(Billiton; Banka); Atlas Ichth. Ind. Néerl.,
vol. 6, p. 66, pl. (8) 254, fig. 2, 1866-72
(Billiton; Banka). — Weber and

Beaufort, Fishes Indo Austral. Archip.,
vol. 4, p. 143, 1922 (Bleeker's material).

Depth $9\frac{3}{4}$; head $2\frac{2}{5}$. Snout $2\frac{1}{8}$
in head from snout tip; eye $4\frac{1}{2}$, 2 in
snout, equals interorbital; maxillary
reaches $\frac{4}{5}$ to eye, length $2\frac{1}{2}$ in
head from snout tip; teeth conic,
pointed; interorbital low.

Scales 70 in lateral series.

D. I, 20 to I, 22, fin height $3\frac{3}{4}$ in
total head; A. I, 8 (I, 7 on figure), fin
height 4; caudal $2\frac{3}{4}$, convex behind;
least depth of caudal peduncle $1\frac{1}{4}$
times eye; pectoral $3\frac{1}{6}$ in total head,
rays I, 7 or I, 8; ventral I, 5, origin below
first third of dorsal base, fin $6\frac{1}{8}$
in total head, reaches $1\frac{2}{3}$ to anal.

Brownish green, below paler. No
silvery lateral band. Fins brownish.
Length 77 mm. (Bleeker.)

Malaya, East Indies. Weber and
Beaufort give the scales as 90 in
lateral series.

Genus Loligorhampus Whitley

Loligorhampus Whitley, Records Austral. Mus., vol. 18, no. 3, p. 105, March 25, 1931. (Type Loligorhampus normani Whitley, orthotypic.)

Body slender, elongate. Head compressed, flat above. Snout little longer than broad. Eye large, midway in head from snout tip. Maxillary not entirely concealed. Beaks long, tapering, with narrow median groove and each lateral cutaneous fold broader than beak itself. Interorbital low. Gill rakers, slender, numerous. Scales small. Anal begins little behind dorsal origin. Caudal forked, lower lobe little longer. Pectoral small, pointed. Ventral small, short, inserted nearer caudal base than pectoral base.

Known among all the genera of the family by the greatly developed cutaneous flap along each side of the mandible or beak.

Loligothamphus normani Whitley
Loligothamphus normani Whitley,
 Records Austral. Mus., vol. 18, No. 3,
 p. 105, pl. 12, figs. 2-3, March 25,
 1931 (type locality: Townsville,
 Queensland).

Depth 14, compressed, flattened
 on dorsal and ventral surfaces;
 head 2, head from snout tip 4,
 width 3. Snout $2\frac{1}{3}$ in head from
 snout tip; eye 4, $1\frac{2}{5}$ in snout,
 $1\frac{1}{8}$ in interorbital; maxillary
 apparently reaches $\frac{4}{5}$ to eye, length
 about $2\frac{3}{4}$ in head from snout
 tip; interorbital $3\frac{3}{5}$, low or
 nearly level. Gill rakers +40.

Scales about 60 in lateral
 series; 6 on side of caudal
 peduncle. Tubes of lateral line
 straight, with few short simple

Depth $3\frac{1}{8}$ to $3\frac{3}{5}$; head 3 to $3\frac{1}{8}$, width $2\frac{1}{8}$ to $2\frac{1}{5}$. Snout $3\frac{2}{3}$ to $4\frac{4}{5}$ in head from snout tip; eye $3\frac{1}{8}$ to 4, greater than snout or interorbital, subequal with snout with age; maxillary reaches $\frac{1}{5}$ to $\frac{1}{3}$ in eye, expansion $1\frac{3}{4}$ to $2\frac{3}{4}$ in eye, length $2\frac{3}{4}$ to 3 in head from snout tip; teeth uniserial, small, conic, with 4 canines in front of each jaw of which upper pair closer and each outer pair larger; fine band of small, short, teeth on vomer and palatines; interorbital $4\frac{2}{3}$ to $5\frac{1}{5}$, little convex. Gill rakers 5 + 13, lanceolate, $\frac{3}{4}$ of gill filaments, which $1\frac{3}{4}$ in eye.

Scales 30 to 36 in median lateral series to caudal base and 7 to 10 more on latter; upper section of lateral line with 23 to 28 tubular scales, lower section with 7 or 8 to caudal base and

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lateral branches. Fins without scales.

D. 14, first ray $7\frac{1}{4}$ in total head length; A. 15, base shorter than dorsal base, ~~first ray~~ fin height 9; caudal 4, forked, upper lobe ~~about~~ shown but little shorter than lower; least depth of caudal peduncle about equals eye; pectoral 6 in total head length; ventral $7\frac{1}{5}$.

Brownish above, lighter below. Beaks and folds nearly all black, also edges of lowermost folds and areas on top of head and opercle. Each scale pocket on back with blackish mark. A blackish lateral stripe, probably silvery in life, from punctulated pectoral base to caudal base, broadest between dorsal

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pictus Klunzinger, Fisch. Roth. Meer.,
1884, p. 56.

Chaetodon speciosus (Parkinson) Cuvier,
Hist. Nat. Poiss., vol. 7, 1831, p. 40. Tahiti:

Chaetodon decussatus Cuvier, l.c., p. 41.⁵⁴

Pondichery. — Ahl, Arch. Naturges., band 89,
abth. A, heft 5, 1923, p. 152 (no locality).

Chaetodon vagabundus var. jordani Ahl,
l.c., p. 181 (in Jordan and Starbck).

and anal. Fins colorless, with
blackish pigment over dorsal
and anal. Length 206 mm. (Whitley)

Queensland.

Batu, Nias, Java, Bawean, Celebes, Sangi, Sumbawa, Timor, Ternate, Batjan, Buru, Ceram, Amboina, Harucu, Goram, Banda, (uru).

Chaetodon pictus Forskäl, Descr. Animal, 1775, pp. XIII, 65. Mochha, Red Sea. — Gmelin, Syst. Nat. Linn., 1789, p. 1269 (Arabia). — Walbaum, Arted. Pisc., vol. 3, 1792, p. 422 (in Forskäl). — Schneider, Syst. Ichth. Bloch, 1801, p. 226 (Arabia). — Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 457, 484 (Arabia, Mauritius). — Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 24 (Madras). — Kaup, Arch. Naturges., band 26, abth. 1, 1860, p. 154 (Africa, Asia, Moluccas, Tahiti). — Klunzinger, Verh. zool. bot. Ges. Wien, band 20, 1870, p. 781 (Koseir, Red Sea). — Day, Fishes of India, pt. 1, 1875, p. 105, plate 26, fig. 2 (Andamans).

Chaetodon (Anisochaetodon) vagabundus var.

Genus Homorhamphus Weber and Beaufort
Homorhamphus Weber and Beaufort,

Fishes Indo Austral. Arch., vol. 4, p.
 141, 1922. (Type Homorhamphus
celebensis Weber and Beaufort.)

Body elongate, compressed. Head rather large. Triangular part of upper jaw long as wide. Eye high, median in head length. Mandible slightly projects beyond upper jaw, with fleshy extension at tip (curved backwards in preserved specimens). Premaxillary teeth in band, fine, similar in lower jaw. Gill openings wide. Gill rakers few, tubercular, spinescent. Scales moderate, rather deciduous. Lateral line indistinct, low. Dorsal far posterior, behind anal origin. Anal longer than dorsal. Caudal rounded. Pectoral high, less than head. Ventral small, little nearer head than caudal.

Small viviparous hemiramphids of the fresh waters of Celebes.

Analysis of species

a.¹ Scales 50 to 55; D. 11 or 12.

a.² Scales 64; D. 12 or 13. celebensis.
hageni.

Homorhamphus celebensis Weber and Beaufort

Homorhamphus celebensis Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 141, fig. 53, 1922 (type locality: Lake Posso; rivulet at Lappa Kawru, Celebes).

Depth 5 1/2, rather compressed; head 3. Snout 2 1/4 in head from snout tip; eye 5, 2 in snout, ^{1 3/4 in interorbital} maxillary reaches eye, length 2 1/8 in head from snout tip; interorbital flat.

Scales 50 to 55 in lateral series. D. 11 or 12, fin height 2 2/3 in total

head length; A. 15, fin height $2\frac{1}{4}$,
inserted little before dorsal origin;
caudal $1\frac{3}{4}$, convex behind; least
depth of caudal peduncle $4\frac{3}{4}$;
pectoral 2; ventral $3\frac{2}{5}$, origin
midway between hind eye edge and
caudal base.

Yellowish, with fine dark
longitudinal line. Dorsal with black
blotch at base of its hind border,
also some dark patches along front
border. Front and hind border of
anal blackish, also upper, lower
and hind border of caudal, which
last also with indications of cross
bands. Paired fins tipped with
black. Length 84 mm.

(Weber and Beaufort.)

Celebes.

- vol. 39, 1914, p. 227 (Diego Suarez, Madagascar).
 — Pellegrin, Bull. Mus. Hist. Nat. Paris, 1914, no. 3, p. 2 (Baie de Tamatave, Madagascar).
 — Jordan and Starks, Ann. Carnegie Mus., vol. 11, 1917, p. 457 (Ceylon). — McCulloch, Records Austral. Mus., vol. 14, no. 1, 1923, p. 3, ^{plate 1, figs 1-2} (Laurier Reef off Cooktown, Queensland).
 — Ahl, Arch. Naturges., band 89, abth. A, Heft 5, 1923, p. 153 (Indian Ocean, Ralum, New Guinea, Matupi, German New Guinea, New Pommernia, South Sea, Samoa, French Islands, Ambonia, East Indies, Mauritius, Tabao). — Fowler, Proc. Acad. Nat. Sci. Phila., 1923, p. 42 (Madagascar). — Fowler, Bishop Mus. Bull., no. 22, 1925, p. 33 (Samoa).
Chetodon vagabundus Bonnaterre, Tabl. Ichth., 1788, p. 89 (India).
Tetragnopterus (Liophora) vagabundus Bleeker, Atlas Ichth. Ind. Neerl., vol. 7, 1877, p. 48, plate (16) 378, fig. 1 (Sumatra).

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Homorhamphus hageni (Poeyta)

Hemiramphus hageni Poeyta, notes
Leyden Mus., vol. 34, p. 190, 1912
(Type locality: Penango - Rumbia Ebene
in south east Celebes).

Homorhamphus hageni Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4,
p. 142, 1922 (types).

Depth $4\frac{1}{2}$ to 5 in length with caudal;
body compressed, width 2 to $2\frac{2}{3}$
in depth; head $3\frac{1}{4}$ to $3\frac{4}{7}$. Eye
 $5\frac{1}{2}$ to 6 in head, $1\frac{4}{5}$ to 2 in
postorbital part of head, $1\frac{2}{3}$ in
interorbital; triangular part of
upper jaw $1\frac{1}{4}$ times long as broad;
teeth small.

Scales 64 in lateral series; 24
transversely.

D. 12 or 13, origin above fourth
anal ray; A. 15; ventral origin
midway between hind edge of eye
and caudal base.

Olive brown above, yellowish below. Black blotch on shoulder.

Length 94 mm.

(Weber and Beaufort)

Celebes.

Cebu). — Steindachner, Abhandl.
 Senckenberg. Gesell., band 25, 1900, p. 420
 (Ternate). — Jordan and Fowler, Proc.
 U. S. Nat. Mus., vol. 25, 1902, p. 532 (Okinawa).
 — Fowler, Journ. Acad. Nat. Sci. Phila., vol.
 17, series 2, 1904, p. 544 (Padang). —
Evermann and Seale, Bull. Bur. Fisher., vol.
 26, 1906 (1907), p. 96 (Bacon). — Steindachner,
 Denks. Akad. Wiss. Wien, band 71, abth. 1,
 1907, p. 138 (Makalla, South Arabia). —
Regan, Ann. Durban Mus., 1908, p. 245 (Kosi
 Bay). — Gilchrist and Thompson, Ann.
 South Afr. Mus., vol. 11, pt. 2, 1911, p. 34 (Katal).
 — Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912,
 p. 422 (Misaki and Tanegashima), p. 510
 (Okinawa). — Beaufort, Bijdr. Dierk.
 Amsterdam, deel 19, 1913, p. 124 (Sorong, New
 Guinea). — Weber, Siboga Exped., band 65,
 1913, p. 307 (Memado, Karakelang, Salibabu,
 Saleyer). — Pellegrin, Bull. Soc. Zool. France,

Genus Zenarchopterus Gill

Zenarchopterus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 273. (Type Hemiramphus dispar Valenciennes, orthotypic.)

Labidorhamphus Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1905, p. 493. (Type Hemiramphus amblyurus Bleeker, orthotypic.)

Body elongate, more or less compressed. Lower jaw prolonged in long beak, with fine feeble conic teeth only opposite short upper jaw; beak bordered by 3 more or less conspicuous folds of skin, one median begins on chin and one on each edge. Gill rakers well developed. Scales of back overlap each other in two directions. Lateral line low. Dorsal far postmedian, begins little before anal, which shorter. Male often with some dorsal rays produced

and some anal rays much enlarged, broadened and articulations increased, also many fine secondary rays occur. Caudal broad or truncate, never forked. Pectoral inserted high. Ventral nearer caudal than head.

Rivers and estuaries of the Indo Pacific, species numerous. Viviparous.

H. 368 - 370

{ 389 - 393

[378 - 381

extracted

Analysis of species

a. Zenarchopterus. Triangular part of upper jaw slightly broader than long or wide as long.

b. Triangular part of upper jaw wider than long.

c. Fourth dorsal ray, ^{of male} moderately prolonged, not expanded, not reaching hind end of fin; anal with third lobe (tenth ray expanded) longest. dispar.

c.² Dorsal rays uniformly low; male with single anal lobe, its front rays longest. buffonis.

b.² Triangular part of upper jaw long as wide.

d. Dorsal rays all uniformly low.

e. Anal rays 13 or 14; male with trilobate anal.

f. No dark lateral blotches on body;

(9' dorsal rays 14, fin black.
atrodorsalis.

male with front anal lobe longest.

novae-guineae.

f.² Two round black spots
medially on each side of body;
male with median anal lobe
longest.

quadrimaculatus.

e.² Anal rays 11 or 12; male with
median anal lobe ^{usually} longest.

g.² Dorsal rays 12 or 13, ^{usually} uniformly low, dark brown.

pappenheimi.

g.³ Dorsal rays 10 or 11, fourth prolonged and
expanded terminally, reaches beyond fin; dunckeri.

e.³ Anal rays 8 or 9; male with
bilobate anal and front lobe trifle
longer.

beauforti.

d.² Fourth dorsal ray prolonged well
beyond other rays.

h.¹ male with fourth dorsal ray
moderately extended, scarcely
thickened, not reaching hind
edge of fin; anal with median
lobe longer than hind lobe and
front lobe greatly shortest. benieri

h.² male with fourth dorsal

ray greatly prolonged and thickened, reaches to or beyond hind end of fin; anal lobes 3, subequal.

philippinus.

d.³ Fifth dorsal ray prolonged to tip of last dorsal ray.

a.² Labidorhamphus. Triangular part of upper jaw 1 1/2 to 2 or more times longer than broad; anal rays 11 to 13.

i.¹ Dorsal rays uniform; male with sixth anal ray expanded and apparently largest. caudovittatus.

i.² Male with second to fifth rays forming small or short lobe, little longer than others; anal with fifth to seventh rays expanded and subequally largest. ectentio.

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Zenarchopterus dispar (Valenciennes)

Hemiramphus dispar Valenciennes, Hist. Nat. Poiss., vol. 19, p. 58, pl. 558, 1846 (type locality: Madagascar; Labouane River, Java). — Bleeker, Nat. Tijds.

Nederl. Indië, vol. 6, p. (458) 498, 1854 (~~Amboina~~^{part}); vol. 8, p. 307, 1855 (Batoe);

vol. 9, p. 259, 1855 (Sibogha); vol. 13, p. 284, 1857 (Tjirutjip, Biliton), p. 374 (Sangi); Act. Soc. Sci. Ind. Néerl., no. 7, vol. 2, p. 7, 1857 (Amboina); no. 4, vol. 3, p. 4, 1857-58 (Tanawanke); no. 9, p. 3 (Padang), p. 4 (Trussan);

Nat. Tijds. Nederl. Indië, vol. 15, p. 203, 1858 (Goram); Act. Soc. Sci. Ind. Néerl. (Dicht. Sumat.), vol. 8, p. 12, 1859 (Benculen); Nederl. Tijds. Dierk., vol. 1, p. 345, 1863 (Madagascar).

— Guichenot, Mém. Soc. Sci. Cherbourg,

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ser. 2, vol. 2, p. 147, 1866 (Madagascar).

— Martens, Preuss. Exped. Ost Asien, vol. 1, pp. 210, 401, 1876 (Bangkok). —

Weber, Zool. Ergebn. Reis. Ned. Ost Ind., vol. 3, p. 456, 1894 (Billiton, Sumatra, Java, Celebes, Ternate).

Hemirhamphus dispar Kner, Sitzb. Ber. Akad. Wiss. Wien, vol. 30, p. 537, fig. 3, 1860 (Java). — Gill, Proc.

Acad. Nat. Sci. Philadelphia, 1863, p. 273 (name). — Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 274, 1866 (Ceylon; East Indies). — Playfair, Proc. Zool.

Soc. London, 1867, p. 868 ().

— Peters, Monatsb. Akad. Wiss. Berlin, 1871, p. 32 (Licuare River). — Day, Fishes

of India, pt. 3, p. 517, ^{pl. 119, fig. 5} 1877, — Sauvage,

Bull. Soc. Philomath. Paris, ser. 4, vol. 7,

p. 151, 1882 (Mé ham, Siam). — Day,

Fauna British India, Fishes, vol. 1,
p. 426, 1889. — Sauvage, Hist. nat.

Madagascar, Poiss., p. 526, 1895 (name).

— Elera, Cat. Fauna Filip., vol. 1, p. 576,
1895 (Luzon, Manila, Navotas). — Volz,

Rev. Suisse, Zool., vol. 12, p. 472, 1904
(Sumatra); Nat. Tijds. Nederl. Indië,
vol. 46, p. 180, 1907 (Padang, Siboga,
Trussan, Benkulen, Deli, Langkat).

Hemirhamphus dispar Gorgoza, Anal.
loc. Espan. Hist. nat. Icthid., vol.
14, p. 73, 1885 (Museo Ultramarino).

Hemirhamphus (Zenarchopterus) dispar
Beaufort, Bijdr. Dierk. Amsterdam,
p. 104, 1913 (Maonek and Mirdika River,
Amboin).

Zenarchopterus dispar Bleeker, Nederl.
Tijds. Dierk., vol. 3, p. 164, 1866
(Java, Sumatra, Batu, Billiton,
Sangi, Celebes, Amboina, Goram);
Atlas Ichth. Ind. Néerl., vol. 6, p.
63, pl. (7) 213, fig. 4 (same localities).

— Jordan and Seale, Bull. Bur. Fisher.,
vol. 26, p. 9, 1906 (1907) (Cavite). —

Evermann and Seale, Bull. Bur. Fisher.,
vol. 26, p. 59, 1906 (1907) (Bacon). —

Seale and Bean, Proc. U. S. Nat. Mus.,
vol. 33, p. 240, 1907 (Zamboanga). —

Günther, Journ. Mus. Godeffroy, vol. 8,
pt. , p. 358, 1909 (Ponapé, Guadalcanar,
Samoa, Fiji). — Boulenger, Cat. Fresh
Water Fish. Africa, vol. 3, p. 16, fig.
(copied), 1915 (Seychelles, in fresh
water). — Fowler, Copeia, no. 58, p. 62,
June 18, 1918 (Philippines); Proc. Acad.
Nat. Sci. Philadelphia, 1919, p. 9
(Philippines). — Weber and Beaufort,

Fishes Indo Austral. Archip., vol. 4, p. 169, fig. 58, 1922 (Simalur, Nias, Balikpapan, Borneo, Ambon, Nusa Laut). — Mohr, Zool. Jahrbücher, Jena, vol. 52, p. 254, fig. 16, ^{(anal fin),} 1926 (Saha, Admiralty Islands; Lindenhafen, New Pomerania; Ponapé). —

Duncker and Mohr, Mitteil. Zool. Mus. Hamburg, vol. 42, p. 127, 1926 (Saha; Lindenhafen). — Fowler,

Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 263 (Bangueid, Santa Maria, San Fernando, Vigan, Philippines); Mem. Bishop's Mus., vol. 10, p. 79, 1928 (Kusaie, Carolines; Strong Island; Suva); vol. 11, no. 5, p. 319, 1931 — Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, art. 10, p. 4, 1927 (Benkoelen, Sumatra).

(Gauza River, Vanana Levu, Fiji). Journ. Bombay Nat. Hist. Soc., vol. 32, no. 4, p. 705, Mar, 1928 (Ceylon).

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Hemirhamphus commersonii (not Valenciennes) Peters, Reise Mossambique, vol. 4, p. 94, 1868 (part).

Zenarchopterus vaisigani Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 208, fig. 11, 1905 (1906) (type locality: Vaisigano River at Apia, Samoa).

Zenarchopterus philippinus (not Peters) Fowler, Copeia, no. 58, p. 62, June 18, 1918 (Philippines; part).

? Zenarchopterus duy Seale, Philippine Journ. Sci., vol. 5, p. 267, pl. 2, fig. 2, 1911 (type locality: Sandakan, Borneo).
— Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 169, 1922 (copied).

→

Depth 8 to $9\frac{3}{4}$, moderately compressed; head $2\frac{1}{2}$, head from snout tip $3\frac{3}{4}$ to $3\frac{4}{5}$, width $2\frac{4}{5}$ to 3. Snout 3 in head from snout tip; eye $3\frac{7}{8}$, $1\frac{1}{6}$ in snout, subequal with ~~snout~~ interorbital; maxillary reaches $\frac{7}{8}$ to eye, length $3\frac{1}{5}$ to $3\frac{1}{3}$ in head from snout tip; interorbital $3\frac{3}{4}$ to $3\frac{7}{8}$, low, flat. Gill rakers 5 + 11, lanceolate, $1\frac{1}{5}$ in gill filaments, which $2\frac{1}{2}$ in eye.

Scales 31 or 32 in lateral axial series from above gill opening to caudal base and 4 or 5 more on latter; 6 above, 1 below, 40 predorsal forward to snout end of which 25 forward to occiput above gill opening. Scales with 6 basal radiating striae; circuli moderate, more or less complete.

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Depth $1\frac{1}{3}$ to $1\frac{2}{5}$; head $2\frac{7}{8}$ to $3\frac{1}{8}$, width $2\frac{1}{5}$ to $2\frac{1}{3}$. Snout $2\frac{2}{5}$ to $3\frac{2}{5}$ in head; eye $3\frac{1}{8}$ to $3\frac{3}{5}$, $1\frac{1}{3}$ to $1\frac{1}{2}$ in snout, little greater than interorbital; maxillary $\frac{3}{5}$ to $\frac{2}{3}$ in snout, 4 to $4\frac{2}{3}$ in head; interorbital $3\frac{1}{5}$ to $3\frac{7}{8}$, slightly convex; with age small horny spine developed over upper front eye edge, strong, not longer than pupil; occiput with horny tubercle like spine, though much less developed than in *Hemiochus varius*. Gill rakers 5+13, short points, about 20 of gill filaments, which $1\frac{1}{8}$ in eye. Vuber 55 to 58 in lateral line to caudal base; 11 or 12 scales above lateral line, 27 or 28 below. Scales with 10 to 12 basal radiating striae; apical denticles 75 to 90, with 10 to 33 transverse series of basal elements; circuli five.

D. XII, 23, I to 26, I, fourth spine elongated, $1\frac{3}{5}$ to 2 in combined head and body, fourth ray $1\frac{1}{3}$ to $1\frac{2}{5}$ ^{in head}; A. III, 18, I or 19, I.

D. II, 10, first branched ray $5\frac{4}{5}$ to $6\frac{1}{2}$ in total head length;
 A. II, 10, first branched ray $4\frac{3}{4}$? to 5; caudal $2\frac{1}{2}$, convex behind;
 least depth of caudal peduncle $7\frac{2}{3}$ to $8\frac{3}{5}$; pectoral $3\frac{1}{8}$ to $3\frac{1}{5}$;
 ventral $6\frac{1}{5}$ to $6\frac{1}{4}$, origin about last third in space between front pupil edge and caudal base.

Brownish or drab, scarcely paler below. Iris neutral gray, evidently silvery white in life like sides of head? Dark line down predorsal region medially. Narrow gray lateral band axial from above gill opening to caudal base, most distinct between dorsal and anal and bordered above by dark line. Sides of head body under a lens seen sprinkled with dusky dots. Fins

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Heniochus monoceros Cuvier.

Heniochus monoceros Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 76. Mauritius. —

Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 41 (type). — Günther, Journ. Mus. Godeffroy, band 2-3, ^{heft} A 5-6, 1874, p. 49, plate 38 (Samoa and Tahiti). — Uhl, Arch. Naturges., band 89, abth. A, heft 5, 1923, p. 29 (Samoa and Mauritius).

Tawichthys monoceros Bleeker, Atlas Ichth. Ind. Néerl., vol. 9, 1877, p. 28, plate (3) 365, fig. 3 (Java).

Loa excelsa Jordan, Proc. U. S. Nat. Mus., vol. 59, 1921, p. 552, fig. 6. Hawaii (young).

pale, dorsal and anal little darker terminally, anal blackish terminally.

Madagascar, Seychelles, India, Andamans, Siam, East Indies, Philippines, Queensland, Melanesia, Micronesia, Polynesia. Zenarchopterus
dux Seale does not appear to differ in way from the present species. It is based on a single specimen 150 mm long, evidently a female.

515. Biri Channel. June 2, 1909.

Length 126 mm.

4638. Bubuan Island. February 14, 1909.

Length 97 mm.

4616. Calangaman Island. March 16, 1909.

Length 141 mm.

1248. Candaraman. January 4, 1909.

Length 120 mm.

7975. Catbalogan, Samar. April 16, 1908.

Length 115 mm.

3889 and 3890. Endeavor Strait. December 23, 1908. Length 106 to 140 mm.

A1210. Gomomo Island. December 3, 1909.

Length 140 mm.

18987. Gubat Bay, Luzon. June 23, 1909.

Length 122 mm.

7748. Jolo market. February 12, 1908.

Length 149 mm.

1103, 1104, 6032, 6081. Little Santa Cruz Island.

May 28, 1908. Length 105 to 157 mm.

20206 to 20209. Alimango River, Burias Island. March 5, 1909. Length 74 to 129 mm.

1 example. Alimango River. March 6, 1909. Length 51 mm.

33 examples. Bacoor, ~~February 14,~~ ~~1908~~ Luzon. June 15, 1908. Length 31 to 170 mm.

1 example. Basiao Island, Samar. April 16, 1908. Length 41 mm.

1 example. Basud River, Luzon. June 15, 1909. Length 66 mm.

2 examples. Batan Island. July 22, 1909. Length 65? to 105 mm.

22178. Bubuan. February 14, 1908. Length 85? mm.

20 examples. Buena Vista, Guimaras Island. January 14, 1909. Length 75 to 190 mm.

6 examples. Busin Harbor, Burias Island. April 23, 1908. Length 58 to 135 mm.

1 example. Cabugao Bay, Catanduanes Island. June 6, 1909. Length 62 mm.

8 examples. Caiholo River, Ulugan Bay, Palawan Island. December 29, 1908. Length 95 to 150 mm.

26 examples. Cammahala Bay, Ragay Gulf, Luzon. March 11, 1909. Length 82 to 154 mm.

1 example. Cataingan Bay, Masbate Island. April 18, 1908. Length 66 mm.

7 examples. Catbalogan, Samar Island. April 16, 1908. Length 87 to 123 mm.

7830. Cebu market. April 7, 1908. Length 111? mm.

7516. Cotabato, Mindanao. May 20, 1908. Length 193 mm.

23740 to 23742. Dumaca River,
Luzon. February 25, 1909. Length
101 to 185 mm. 24 examples.

9 examples. East side Tagbalaran
Strait, Bohol Island. April 9, 1908.
Length 33 to 103 mm.

20476 to 20479. Endeavour Strait,
mouth of stream at village near
Chase Head, Palawan. December 22,
1908. Length 120? to 156 mm.

11924. Jolo market, Jolo. February
17, 1908. Length 130? mm.

11 examples. Jolo market. March 7, 1908.
Length 129 to 170 mm.

5514, 22565. Malabon market, August
8, 1908. Length 95? to 100? mm.

19748 to 19752. Malampaya River,
Palawan. December 26, 1908. Length
47 to 16⁵ mm. 10 examples.

5 examples. Malcochin Harbor,
Linapacan Island. December 18, 1908.
Length 36 to 68 mm.

22338, 22339. Malinao River,
Mantaguin Bay, Palawan. April 2,
1909. Length 112 to 152? mm.

2 examples. Malugas River,
Mindoro. December 11, 1908. Length
105 to 124 mm.

19598. Manila harbor. January 13, 1908.
Length 130 mm.

4525. Manila market. December 12,
1909. Length 82 to 150 mm. 4 examples.

62 examples. Mariguina River at
Uana. January 1, 1908. Length 30 to 62
mm.

8 examples. Matnog Bay, eastern
Luzon. May 31, 1909. Length 43 to 80
mm.

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19880. Montalban, San Mateo River,
Luzon. December 1, 1907. Length 92? mm.

1 example. Montalban. January 1, 1908.
Length 148 mm.

7 examples. Mircielagos Bay,
Mindanao. August 20, 1909. Length
80 to 148 mm.

20081. Hakoda Bay, in river,
Palawan. December 31, 1908. Length
81 to 164 mm. 3 examples.

1 example. Kato River. June 17, 1909.
Length 58 mm.

1 example. Paluan River, Mindoro.
December 11, 1908. Length 48 mm.

3 examples. Panabutan Bay,
Mindanao. February 6, 1908. Length
126 to 138 mm.

8 examples. Pancol, Malampaya Island, Palawan. Length 113 to 175 mm.

86 examples. Pasacao, in river, Luzon. March 9, 1909. Length 70 to 185 mm.

14 examples. Philippines. Length 41 to 96 mm.

1 example. Port Dupon, Leyte. May 6, 1908. Length 40 mm.

48 examples. Port Dupon. March 17, 1909. Length 68 to 170 mm.

5 examples. Port Janelo, Luzon. July 13, 1908. Length 33 to 57 mm.

9 examples. Port San Pio Quinto, Camiguin Island. November 11, 1908. Length 53 to 155 mm.

19 examples. Port San Vicente, Palau River. November 14, 1908. Length 42 to 161 mm.

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6566 to 6571. Port San Vicente.
November 18, 1908. Length 120 to 150
mm. 12 examples.

13 examples. Pucot River, Mariveles,
January 29, 1909. Length 85 to 151 mm.

20070 to 20072. Pucot River,
backwater ponds, Mindanao. January
30, 1909. Length 87 to 133 mm.

2 examples. Ragay Bay, Ragay,
Luzon. March 9, 1909. Length 38 to 45
mm.

19458, 19459, 19512 to 19514, 22020.
Ragay River. March 10, 1909. Length ~~108~~
98 to 135? mm.

22582. Romblon. March 25, 1908.
Length 126 mm.

21306. Romblon. March 26, 1908.
Length 140 mm.

7 examples. San Antonio, Cavite,
Luzon. June 27, 1908. Length 36 to
38? mm.

6 examples. San Antonio. July 30,
1908. Length 78 to 111 mm.

1 example. San Antonio. July 31, 1908.
Length 20 mm.

2 examples. San Miguel, Ticao
Island. April 2, 1908. Length 52 to 58 mm.

19671, 19673. Santa Cruz Island,
Marinduque Island. April 24, 1908.
Length 51 to 123 mm. 4 examples.

19 examples. Santiago River, Pagapas
Bay, Luzon. February 20, 1909. Length
88 to 187 mm.

1 example. Sebatic Island. January
2, 1909. Length 72? mm.

2 examples. Sebatic Island. November
3, 1909. Length 81 to 89 mm.

1 example. Shore above Iloilo River.
June 2, 1908. Length 34 mm.

2 examples. Tara Island. December
15, 1908. Length 32 to 35 mm.

1 example. Simalue Island.
February 19, 1908. Length 83? mm.

5 examples. Varadero Bay, Mindoro.
July 24, 1908. Length 89? to 132 mm.

20 examples. West coast Palau
Island. November 18, 1908. Length
82 to 163 mm.

5 examples. Zamboanga canal.
October 8, 1909. Length 76 to 93 mm.

1 example. Sandakan, Borneo. ^{start}
March 2, 1908. Length 156 mm.

A. N. S. P., nos. 48624 and 48625.
Philippines, Commercial Museum
of Philadelphia. Length 99 to 112 mm.

~~I am unable to find any tangible
characters for the retention of
Zenarchopterus dux Seale~~

A. N. S. P., no. 51334. Colombo, Ceylon.
1924. Prof. F. Hallberg. Purchased.
Length 155 mm.

basally above. Ventrals black.
Pectoral whitish. Iris brown.

East Indies, ^{Queensland,} Melanesia, ^{Micronesia,} Polynesia, ^{Hawaii.}

The ^{fourth} dorsal spine is usually more elongated in the young, but it is always with a more or less broadly membranous border behind. Some old examples also show rather large variable trifid or bifid supraorbital spines.

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Zenarchopterus buffonis (Valenciennes)

Hemiramphus buffonis Valenciennes,
Hist. Nat. Poiss., vol. 19, p. 48, 1846
(type locality: Pulo Pinan). —

Bleeker, Nat. Tijds. Ned. Indië,
vol. 3, p. (690, 693) 711, 1852 (Wahai,
north Ceram; Banka), p. 718 (Koba),
722 (name); p. 717 (Goessongassam),
vol. 5, p. 154, 1853 (Macassar); vol. 9, p.
192 (Batjan), p. 493 (Amasing and
Madawang Rivers, Batjan); vol. 15,
p. 203, 1858 (Goram); vol. 16, p. 377,
1858 (Priaman); vol. 18, p. 361, 1859
(Blinju, Banka); Act. Soc. Sci. Ind.
Néerl. (Néchst. Sumat.), vol. 8, p. 55,
1859 (Bengkulen and Priaman); Versl.
Akad. Wet. Amsterdam, vol. 12, p. 32,
1861 (Singapore). — Peters, Monatsb.

Akad. Wiss. Wien, 1876 (1877), p. 848
(Segaar Bay). — Weber, Zool. Ergebn.

Reise Ned. Ost Ind., vol. 3, p. 456, 1894

(Singapore, Borneo, Banca, Sumatra, Java, Celebes, Batjan, Ceram, Amboina). — Volz, Naturk. Tijds.

Nederl. Indië, vol. 56, p. 179, 1907 (Priaman and Benkulen). — Weber,

Siboga Exped., vol. 57, Fische, p. 132, 1913 (Macassar).

Hemirhamphus buffonis Günther, Cat. Fishes Brit. Mus., vol. 6, p. 273, 1866 (East Indies). — Day, Fishes of India,

pt. 4, p. 516, pl. 119, fig. 4, 1878; Fauna British India, (vol. 1, Fishes), p. 427, 1889 (Bombay, Hooghly, Andamans, Malay Archipelago, China?).

— Duncker, Mitteil. nat. Mus. Hamburg, vol. 21, p. 170, 1903 (1904) (Klang, Singapore, Kuala Selangor, Muar River, Changi). — Hase, Jena. Zeits. Naturw., vol. 51, p. 541, figs. 13-15, 1914 (Sepik, New Guinea).

Hemirhamphus (Zenarchopterus) buffonis
Peters, Monatsb. Akad. Wiss. Berlin,
 1868, p. 274 (Singapore). — Beaufort,
 Bijdr. Dierk. Amsterdam, p. 104, 1913
 (Saonek and Bojon, Waigiu).

Zenarchopterus buffoni Bleeker, Ned.
 Tijds. Dierk., vol. 3, p. 162, 1866
 (Java, Sumatra, Pinang, Singapore,
 Banka, Borneo, Celebes, Batjan,
 Ceram, Goram, New Guinea); Atlas
 Ichth. Ind. Néerl., vol. 6, p. 62, pl.
 (7) 254, fig. 3, 1866, — 72 (same localities).

— Weber and Beaufort, Fishes Indo
 Austral. Archip., vol. 4, p. 170, 1922
 (Nias, Simalur; Batavia, Semarang,
 Surabaya, Java; Java Sea; Stagten,
 Balikpapan, Borneo; Flores;
 Macassar, Maros, Tello river mouth,
 Celebes; Ambon; Waigiu). — Mohr,

Zool. Jahrbücher, Jena, vol. 52, p. 260,
 1926 (Ponapé; Pelew Islands;
 Varangoi River, Cape Pedar, Luschan

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Harbor, Rein Bay, Tavanatangir Harbor,
Hanam Harbor, and Möwe Harbor,
New Pomerania; Papitalai and
Bird Island Bay, Admiralty Island,
Dorperspitze, east of Long Island,
Langemak Bay and Kaiserin
Augusta River, New Guinea; — Dunker
Java Sea, Soera Laut, Singapore

and Mohr, Mitteil. Zool. Mus. Hamburg,
vol. 42, p. 126, 1926 (preceding localities).

— Fowler, Mem. Bishop Mus., vol. 10,
p. 79, 1928 (type of Zenarchopterus
maculosus).

~~Hemiramphus striga (not Valenciennes)
Blyth, Journ. Asiatic Soc. Bengal,
vol. 27, p. 288, 1859.~~

Hemiramphus cirrhatus Day, Proc. Zool.
Soc. London, 1873, p. 709 (type locality:
Bombay).

Zenarchopterus buffonis Fowler, Proc. Acad.
Nat. Sci. Philadelphia, 1905, p. 494 (Baram,
Borneo). — Seale, Philippine Journ. Sci.,
vol. 5, no. 4, Oct. 1910, p. 267 (Borneo).

Zenarchopterus maculosus Garman, Bull.
Mus. Comp. Zool., vol. 39, p. 239, pl.
5, fig. 4, 1903 (type locality: Suva,
Fiji Islands). — Günther, Journ.

Mus. Godeffroy, vol. 8, pt. 16, p. 359,
1909 (copied).

Depth 9, broad above and more or less flattened sides convergent below; head $2\frac{1}{10}$, ~~width~~ head from snout tip $4\frac{1}{4}$, width $2\frac{1}{2}$, Snout $2\frac{4}{5}$ in head from snout tip; eye $3\frac{3}{4}$, $1\frac{2}{5}$ in snout, $1\frac{1}{2}$ in interorbital; maxillary reaches $\frac{7}{8}$ to eye, length $2\frac{7}{8}$ in head from snout tip; interorbital $2\frac{4}{5}$, very low, only slightly convex. Gill rakers 5 + 14, lanceolate, equal gill filaments, which $2\frac{4}{5}$ in eye.

Scales 40 in axial lateral series from above gill opening to caudal base and 5 more on latter; 5 above, 2 below, 40 predorsal forward to front of snout of which 31 forward opposite hind eye edge. Dorsal and anal scaleless, caudal base scaly. Scales with 10 short.

fourth ray $2\frac{3}{5}$ to $3\frac{1}{4}$; least depth of caudal peduncle 3 to $3\frac{1}{5}$; caudal truncate, slightly convex as expanded, $1\frac{2}{5}$ to $1\frac{1}{2}$; pectoral $2\frac{1}{2}$ to $2\frac{3}{4}$ in combined head and body; ventral $2\frac{3}{5}$ to 3.

Pale to whitish generally. Broad blackish brown oblique band from eye and predorsal to most of post-ventral region, including pectoral base. Muzzle, interorbital and occipital region pale or whitish, with blackish median streak at snout tip. Second broad blackish band from fourth and fifth dorsal spines obliquely to include posterior half of soft anal, which in young with median black ocellus large as eye. Rather diffuse brown oblique band along soft dorsal base and reflected as dark triangular blotch on caudal

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marginal striae basally; circuli rather coarse, basal, obsolete apically.

D. I, 12, first branched ray $5\frac{3}{4}$ in total head length; A. II, 8, first branched ray $6\frac{4}{5}$; caudal $3\frac{1}{8}$, apparently rounded behind; least depth of caudal peduncle 7; pectoral $4\frac{1}{4}$; ventral $9\frac{2}{3}$, origin little nearer caudal base than depressed pectoral tip.

Back pale brown, also sides and under surfaces which with silvery white tints. Narrow silvery band from close above pectoral base to middle of caudal, expanding between dorsal and anal until wide as pupil. Sides sprinkled with dark brown dots, mostly evident under lens. Iris and sides of head silvery white. Each

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Depth $1\frac{1}{3}$ to $1\frac{2}{5}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$, width 2 to $2\frac{1}{8}$. Snout $2\frac{4}{5}$ to 3 in head; eye $2\frac{7}{8}$ to $3\frac{1}{5}$, $1\frac{1}{8}$ to $1\frac{1}{6}$ in snout, greater than interorbital in young to equal to interorbital with age; maxillary $\frac{1}{2}$ to $\frac{3}{5}$ in snout, 5 to $5\frac{2}{5}$ in head; interorbital $3\frac{3}{4}$ to 4, broadly and slightly convex; with age strong, short, variably simple or bifid supraorbital spine, greatly shorter than pupil. Gill rakers 3+12, short points, about $\frac{1}{10}$ of gill filaments, which $1\frac{3}{5}$ in eye.

Tuber 47 to 54 in lateral line to caudal base; 10 or 11 scales above lateral line, 24 to 26 below. Scales with 9 to 15 basal radiating striae; apical denticles 68 to 90, with 6 to 10 transverse series of basal elements; circuli fine.

D. XII, 21, I or 22, I, fourth spine $1\frac{1}{8}$ to $2\frac{1}{5}$ in combined head and body, second ray $1\frac{1}{4}$ to $1\frac{2}{5}$ ^{in head}; A. III, 17, I to 19, I, third spine $1\frac{1}{4}$ to $1\frac{1}{2}$,

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black cutaneous flap along side
of mandible half to $\frac{2}{3}$ width of
same. dorsal neutral black,
other fins whitish.

India, Andamans, Malaya,
East Indies, China?, Melanesia,
Micronesia, Polynesia.

Blanchard

A. N. S. P., no. 55971 . Baram,
British North Borneo, ¹⁸⁹⁸ Dr. W. H. Furness ^{3rd}.
Wistar Inst. Anatomy (13922).
Length 165 mm.

Heniochus chrysoptoma Günther, Cat.

Fish. Brit. Mus., vol. 2, 1860, p. 41 (Amboina).

— Ilera, Cat. Faun. Filip., vol. 1, 1895, p. 489
(Luzon, Manila).

Chaetodon chrysoptomus (Parkerison) Cuvier,

Hist. Nat. Poiss., vol. 7, 1831, p. 75. Tahiti.

(name in synonymy.)

Taurichthys chrysoptomus Bleeker, Atlas

Ichth. Ind. Néerl., vol. 9, 1877, p. 29, plate (4) 366,

fig. 2 (Flores, Ternate, Ceram, Amboina,
Banda, Goram, New Guinea).

Heniochus melanistius Bleeker, Nat. Tijds.

Ind. Indie, deel 7, 1854, p. 98. Banda, heira.

Heniochus drepanoides Thollière, Faun.

Woodlark, 1857, p. 166, Woodlark Island.

Drepane cocher (Montouzier) Thollière,

l.c. (name in synonymy).

Zenarchopterus novae guineae (Weber)

Hemirhamphus (Zenarchopterus) novae guineae Weber, Nova Guinea, vol. 9, pt. 4, p. 553, 1913 (-type locality: Lorentz River; Verlaten Bocht; Regen Island; Rivierkamp; Biwak Island; Sabang; Alkmaar).

Zenarchopterus novae guineae Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 167, 1922 (Lorentz River and Kloofbiwak, New Guinea). — Mohr,

Zool. Jahrbücher, Jena, vol. 52, p. 247, fig. 12 (anal fin), 1926 (Lorentz River). —

Fowler, New. Bishop Mus., vol. 10, p. 78, 1928 (compiled).

Hemirhamphus buffonis (not Valenciennes)

Hase, Jena. Zeits. Naturw., vol. 51, p. 541, figs. 13-15, 1914 (Sepik, Kaiser Wilhelm Land, New Guinea).

Depth $9\frac{3}{5}$ to $11\frac{1}{3}$, compressed, body width $\frac{2}{3}$ its depth; head $2\frac{1}{3}$ to $2\frac{2}{5}$, head from snout tip 3 to $3\frac{1}{3}$. Triangular part of upper jaw scarcely longer than broad at base; eye equal to or somewhat smaller than interorbital space, $1\frac{1}{2}$ to $1\frac{4}{5}$ in postorbital; beak beyond snout tip $3\frac{9}{10}$ to $4\frac{4}{5}$ in total length without caudal; teeth very small, pointed, forming bands, upper band of uniform width and lower band tapering forward; preorbital rounded in front, $\frac{1}{2}$ to $\frac{2}{3}$ of eye.

Scales 50 to 53 in lateral series

D. 14, ^{convex,} 3 times long as anal, third fourth and fifth rays longest and none thickened; A. II, 8 or II, 9, convex,

625

Analysis of the species.

a. Taurichthys. Fourth dorsal spine not prolonged in filament long as entire fish; body with 2 to 4 dark transverse bands, variably broad, never as 2 median similarly broad and sharply defined.

b. Body with greater median portion, including ventrals and anal dark; head and front uniformly dark, separated from body by pale transverse band from front of dorsal to breast. varius

bb. Body with 3 or 4 dark transverse bands.

c. Body with 3 dark well defined transverse bands.

d. Dark bands transverse, first from front of spinous dorsal to chin, second from spinous dorsal medially to belly includes ventral, third from bases of last dorsal spines to last half of soft anal. monoceros

dd. Dark bands more inclined, first from

males with sixth ray swollen and posterior rays smaller than others, fin origin below third or fourth dorsal ray; caudal more or less truncate; pectoral rays I, 7 or I, 8, fin long as or somewhat longer than postorbital region; ventral rays I, 5, short, less $\frac{1}{2}$ of pectoral, origin of fin about twice nearer caudal base than eye.

Yellowish, with silvery lateral band, bordered above by black stripe and widest in postanal region. Fins hyaline, caudal and dorsal dusky. Length 240 mm. (Weber and Beaufort)

East Indies.

624

Roa proposed to replace Loa.

Body greatly compressed, well elevated. Muzzle short. No teeth on palate. Forehead often with bony or horn like projections with age. Preopercle without spine. Scales moderate. Dorsal spines 11 to 13, fourth greatly elevated and filiform. Differs from Chaetodon and related genera chiefly in its elongated fourth dorsal spine.

365

Zenarchopterus quadrimaculatus Mohr.

Zenarchopterus quadrimaculatus Mohr,
Zool. Jahrbücher, Syst., vol. 52, p. 257,
fig. 18-19, 1926 (type locality: Selangor,
Ulu River, Malay Peninsula).

Depth $9\frac{1}{2}$, deepest near end of pectoral; head 2, head from snout tip $3\frac{3}{5}$. Snout $2\frac{4}{5}$ in head from snout tip, upper jaw long as broad; eye 4, $1\frac{1}{4}$ in snout; mouth cleft reaches $\frac{3}{4}$ to eye, length $3\frac{1}{5}$ in head from snout tip; interorbital low, apparently level.

Scales 42 in axial lateral series to caudal base and 2 more on latter; 5 above lateral line, predorsal 29 forward to eye. Dorsal and anal scaleless, caudal base scaly.

D. I, 13, uniformly high in both sexes, first branched ray $9\frac{1}{3}$ in total head; A. II, 10, male with sixth

Zenarchopterus hendersoni Fowler

? Zenarchopterus hendersoni Fowler, Proc.

Acad. Nat. Sci. Philadelphia, 1919, p. 8,
fig. 2 (type locality: Japan).

ray expanded and longest of fin, seventh half so long though also expanded, in female first branched ray $6\frac{7}{8}$ in total head length; caudal $3\frac{1}{3}$, slightly obliquely truncate behind; least depth of caudal peduncle 8; pectoral $4\frac{1}{8}$, rays 11; ventral less than eye, rays 6 or 7, fin origin but slightly before dorsal origin or at last third between hind edge of preopercle and caudal base.

Clear yellowish brown. Beak blackish, tip milk white in life. Each side of body close above dark lateral axial line 2 blackish spots, each about size of pupil, anterior little behind end of depressed pectoral and posterior little before dorsal origin. Dark lateral axial streak from head to caudal

623

Genus Heniochus Cuvier.

Heniochus Cuvier, Règne Animal, vol. 2, 1817,
p. 335. Type Chaetodon macrolepidotus
Linnaeus, designated by Jordan and Evermann,
Genera of Fishes, vol. 1, 1917, p. 105. (Not
versus Henioche Hübner, 1916 in Lepidoptera).

Saurichthys Cuvier, l.c., vol. 2, ed. 2, 1829,
p. 192. Type Saurichthys varius Cuvier,
designated by Bleeker, Arch. Neerl. Sci.
Nat., vol. 11, 1876, p. 304.

Diphrentes Cantor, Journ. Asiat. Soc. Bengal
(Cat. Malac. Fish.), vol. 18, part 1, 1849,
p. 1141. Type Chaetodon macrolepidotus
Linnaeus, monotypic.

Loa (non Stiles 1902) Jordan, Proc. U. S. Nat.
Mus., vol. 59, 1922, p. 653. Type Loa
excelsa Jordan, tautotypic.

Loa Jordan, Popeia, no. 118, May 20, 1923, p. 63.
Type Loa excelsa Jordan, virtually, as

base and expanded below dorsal
 to caudal base where width $\frac{1}{5}$ to
 $\frac{1}{4}$ least depth of caudal peduncle.
 male with lower half of streak
 with many small ocellated flakes.
 male with long, pointed, anal
 papilla, in female rounded
 and smooth. Length 190 mm.
 (Mohr.)

Malay Peninsula.

Chaetodon ocellipinnis Macleay.Chaetodon ocellipinnis Macleay, Proc. Linn.

Soc. New South Wales, vol. 3, 1879, p. 33,

plate 3, fig. 1. King George's Sound.

Snout shorter than eye. Preopercle strongly serrate. $\underline{D. \text{X}}, 23$; $\underline{A. \text{III}}, 19$. Scales 50.

Six black vertical bands; first through eye from occiput and on breast to ventral; second from predorsal; third from spinous dorsal medially; fourth from soft dorsal front to anal; fifth from soft dorsal posteriorly to anal posteriorly; sixth on caudal peduncle posteriorly.

Large black, white edged ocellus on soft dorsal front and another on anal front.

Length 83 mm.

(Macleay.)

368

Zenarchopterus atrodorsalis new species

Depth 10; head 2, head from snout tip $3\frac{2}{3}$, width $2\frac{3}{4}$. Snout $2\frac{3}{4}$ in head from snout tip; eye 4, $1\frac{1}{3}$ in snout, $1\frac{1}{2}$ in interorbital; maxillary reaches $\frac{4}{8}$ to eye, length $2\frac{9}{10}$ in head from snout tip; interorbital 3, low, level. Gill rakers 4 + 15, lanceolate, equal gill filaments, which $2\frac{3}{4}$ in eye.

Scales 40 in axial lateral series to caudal base and 4 more on latter; 5 above, 1 below; 36 predorsal forward to front of snout, of which 26 forward to head. Caudal base scaly, otherwise fins naked. Scales with 6 basal radiating striae; circuli fine, obsolete apically.

D. I, 13, I, first branched ray $7\frac{1}{4}$ in total head length; A. 11, with 3 lobes of which second apparently longest (ends of rays of first lobe broken), sixth ray

(or second lobe) expanded, greatly branched and $5\frac{1}{4}$ in head; caudal $3\frac{1}{2}$, rounded; least depth of caudal peduncle $9\frac{4}{5}$; pectoral $5\frac{2}{5}$; ventral $8\frac{7}{8}$, origin midway between last fifth of depressed pectoral and caudal base.

Body brown, with coppery tinge. Axial dark gray line along side of body, bordering pale or light silvery band about wide as pupil and most distinct between dorsal and anal. Broad cutaneous flap all along each side of mandible black, in contrast with brown color of beak. Dorsal black. Caudal light or dull brown above, paler below. Fins otherwise pale to whitish.

Diagnosis. Known chiefly by its coloration, especially the black dorsal and ^{lateral} membranes of the beak. The free part of the upper jaw is flat, and slightly broader

than long.

U. S. N. M., No. , type.

1 example. Sandakan, Borneo.
February 29, 1908. By electric light.
Length 125 mm. Type!

Zenarchopterus pappenheimi Mohr

Zenarchopterus pappenheimi Mohr,
Zool. Jahrbücher, Syst., vol. 5², p. 258,
fig. 20 (anal fin), 1926 (type locality:
Bangkok).

? Hemiramphus buffonis (not Valenciennes)
Bleeker, Natuurk. Tijds. Dierk., vol. 3,
p. 711, 1852.

Upper jaw long as broad, length
6 in beak before snout tip.

D. 12 or 13, rays uniform, moderate;
A. 11 or 12, rays in 3 lobes, first
lobe shortest with 5 rays, sixth
ray forms median lobe expanded and
ending in point, also seventh and
eighth rays but little shorter than
sixth and form front of third lobe
while remaining much shorter than
those of first lobe; pectoral rays 10;
ventral rays 6. Anal papilla robust,
ends in point.

Dark brown, Beak black. Small

ringed blotch at caudal base. ~~Greatest~~
depth of silvery lateral band $\frac{1}{5}$ to
 $\frac{1}{4}$ least depth of caudal peduncle.
Dorsal membrane dark brown.
Anal with little pigment in front.
Caudal brownish. Paired fins
colorless. Length 168 mm. (Lohr.)

Siam.

644
1327. Calangaman Island. March 16, 1909.
Length 173 mm.

6912 and 6913. Santo Domingo, Batan.
November 7, 1908. Length 225 and 226 mm.

5024. South Tourminas, Luzon anchorage.
February 26, 1908. Length 170 mm.

84094 U.S.N.M. Hawaii. J. Reinhardt.
Length 47 mm; dried example. Type
of Loa excelsa.

65530 U.S.N.M. Rikitea, Mangareva.
Albatross Collection. Length 150 mm.

Zenarchopterus dunckeri Mohr

Zenarchopterus dunckeri Mohr, Zool. Jahrbücher, Jena, vol. 52, p. 255, fig. 17 (fins), 1926 (type locality: Friedrich Wilhelm Harbor and Segar Bay, New Guinea; Rein Bay, New Pomerania; Kewiang Misa, New Mecklenburg). — Duncker and

Mohr, Mitteil. Zool. Mus. Hamburg, vol. 42, p. 127, 1926 (types). — Fowler,

New. Bishop Mus., vol. 10, p. 79, 1928 (compiled).

Hemiramphus dispar (not Valenciennes)
Bleeker, Naturk. Tijds. Ned. Indië, vol. 6, p. 498, 1854 (Amboina). — Kner, Sitz. Ber. Akad. Wiss. Wien, math.-nat. Kl., vol. 30, p. 537, fig. 3, 1860.

Upper jaw long as broad, 7 or 8
in lower jaw.

D. 10 or 11, fourth ray strong,
extended and expanded, reaches
beyond hind end of fin; A. 11 or
12, in 3 sections, first to fifth
pigmented, sixth more than double
third, greatly expanded medially,
third section little longer than first
or only $\frac{2}{3}$ of median or second
section (in small examples median
section but little longer than others);
pectoral rays 10; ventral rays 6.

Dark brown. Blackish pigment
on back. ~~Beak~~ dark brown, in
life end red. Fins clear. Dorsal
membranes pigmented, other fins
only with rays pigmented. Width
of lateral streak on side of tail
 $\frac{1}{5}$ to $\frac{1}{4}$ depth of caudal peduncle.

637
6491. Tilio, Lubang Island. July 15,
1908. Length 151 mm.

~~6641 and 6666. Vardera Bay, Mindoro,
July 23, 1908. Length 176 to 182 mm.~~

~~A 862. Limbe Strait, Celebes. November 10,
1909. Length 153 mm.~~

~~3908. Una Una Road, Borneo Borneo
Celebes. November 17, 1909. Length 89 mm.~~

~~21501. Gane Road, Gillolo Island.
December 7, 1909. Length 50 mm.~~

~~4715. Tidore Island, south of Ternate.
November 25, 1909. Length 75 mm.~~

47778 U.S.N.M. New Guinea. Australian
Museum. Length 148 to 150 mm. 2 examples.

52575 U.S.N.M. Apia, Samoa. Bureau
of Fisheries. Length 103 mm.

55939 U.S.N.M. Bacan, Philippines. Bureau
of Fisheries. Length 145 mm. [3336.]

Length 190 mm.

375
(Mohr.)

East Indies, Melanesia.

black chin. Preocular edged with very pale slate, forehead and snout otherwise black. Oblique white bar begins on tip of first dorsal spine, crosses base of soft dorsal to include caudal peduncle; vertical anal edge beyond narrowly bordered white; soft dorsal beyond stripe yellowish olive green, membranes hyaline terminally, very narrowly edged with greenish black. Caudal similar to soft dorsal only paler. Anal and ventral slaty black. Pectoral dusky hyaline basally. Iris very dark.

1002 and 1003; Tataan. February 20, 1908.
Length 118 to 125 mm.

4965. Tataan, on reef. February 21, 1908.
Length 170 mm.

5830. Tatabada Point. May 15, 1908.
Length 165 mm.

Zenarchopterus beauforti Mohr

Zenarchopterus beauforti Mohr, Zool. Jahrbücher, Syst., vol. 52, p. 259, fig. 21 (fins), 1926 (Type locality: Inuar River, Selangor, Malay Peninsula).

? Hemiramphus striga (not Valenciennes) Blyth, Journ. Asiatic Soc. Bengal, vol. 27, p. 288, 1859.

Upper jaw long as broad, $7\frac{1}{2}$ in lower jaw before snout tip.

D. 11 or 12, rays of uniform equal height, none modified; A. 9 in male, form 2 lobes with third ray longest in in first ~~section~~ lobe and first ray longest in second lobe or only slightly thickened; pectoral rays 10 or 11; ventral rays 6. Male with large anal papilla, small in female.

Clear yellowish, with very little dark pigment which along back. Beak dark brown. Silvery lateral band width $\frac{1}{4}$ to $\frac{1}{3}$ least depth of caudal

peduncle, sharp below dorsal.
Dorsal sparsely pigmented along
rays. Also smaller but more
contrasted dark dots at middle
of caudal rays. Caudal, anal
and paired fins colorless. Length
110 mm. (Mohr.)

Malay Peninsula.

6558 and 6559. Fort Maricaban.

July 21, 1908. Length 155 to 160 mm.

4780. Port Matalvi. November 22, 1908.

Length 121 mm.

4787. Port Matalvi. November 23, 1908.

Length 107 mm.

723. Port Palapag. June 3, 1909. Length

108 mm.

8272. San Miguel Island, Tabaco Bay.

June 4, 1909. Length 111 mm.

5693. Santa Cruz, Marinduque.

April 24, 1908. Length 165 mm.

7976. Talisi Island. November 9, 1909.

Length 133 mm.

1167 and 4912. Tataan Bay, Sinaloa

Island. Length 114 to 143 mm. Slaty black

below, merging into greenish amber

above. Pale bar, including first 3

dorsal spines, passes across opercle, covers breast and lower head except

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Zenarchopterus ~~güntheri~~ ^{kneri} new species

Hemirhamphus dispar (not Valenciennes)
Kner, Sitzs. Ber. Akad. Wiss. Wien,
vol. 39, p. 537, fig. 3, 1860 (East
Indies).

Hemirhamphus dispar Macleay, Proc. Linn.
Soc. New South Wales, vol. 7, p. 593,
1882 (New Guinea).

Hemirhamphus (Zenarchopterus) dispar
Beaufort, Bijdr. Dierk. Amsterdam,
vol. 19, p. 104, 1913 (Saonek, Waigiu).

Zenarchopterus dispar Günther, Journ.
Mus. Godeffroy, vol. 8, pt. 16, p. 358, 1909
(Ponape, Guadalcanar, Samoa, Fiji).
— Kendall and Goldsbrough, Mem.
Mus. Comp. Zool., vol. 26, p. 252, 1911
(Kusai, Suva, Guam).

Hemirhamphus brevirostris (not Cuvier)
Günther, Cat. Fishes Brit. Mus.,
vol. 6, p. 274 (on Kner). — Steindachner,
1866.

Abhand. Senckenberg. Gesell., vol. 25,
p. 450, 1900 (1901) (Batjan).

Zenarchopterus brevirostris Bleeker,
Atlas Ichth. Ind. Néerl., vol. 6, p.
64, 1866-72 (copied). — Mohr, Zool.

Jahrbücher Jena, vol. 52, p. 250, 1926
Dorperspitze, New Guinea;
Liebliche Island, Linden Harbor
and Rien Bay, New Pomerania;
New Lauenburg; Papitalai, Saha,
Drugul and Bird Island Bay,
Admiralty Islands; Saonek, Watigiu;
Polo Belang, Borneo; Changi, Singapore; Madagascar; Mozambique).

— Duncker and Mohr, Mitt. Zool.
Mus. Hamburg, vol. 42, p. 127, 1926
(Mohr's materials). — Fowler, Mem.

Bishop Mus., vol. 10, p. 78, 1928 (compiled).

Depth $7\frac{7}{8}$; head $2\frac{2}{5}$. Snout 3 in head from snout tip, width $1\frac{2}{5}$; eye $4\frac{3}{4}$, $1\frac{1}{2}$ in snout, $1\frac{1}{2}$ in interorbital; maxillary reaches $\frac{7}{8}$ to eye, length 3 in head from snout tip; interorbital 3, very low, nearly level.

Scales 30 in axial lateral series from above gill opening to caudal base and 2 more on latter; 6 transversely at dorsal origin.

D. 11, 10 or 11, fourth ray in male prolonged and thickened, $2\frac{2}{3}$ in total head length; A. 13, sixth ray in male prolonged and thickened, $1\frac{4}{5}$ in total head, also with additional filamentous rays; caudal 2, elongate, rounded behind; least depth of caudal peduncle $6\frac{1}{5}$; pectoral $3\frac{3}{4}$, rays 9; ventral nearer caudal base

Naturges., band 26, abth. 1, 1860, p. 154
 (Africa, Moluccas, Tahiti). — Guichenot,
 Notes J. Remon, vol. 2, 1862, p. 25. —
Playfair, Fishes of Zanzibar, 1866, p. 34
 (Aden). — Guichenot, Mem. Soc. Hist. Nat.
 Cherbourg, vol. 2 (series 2), 1866, p. 145
 (Madagascar). — Kner, Reise Novara Fische,
 1866, p. 271 (Java). — Günther, Journ.
 Mus. Godeffroy, band 2-3, ^{bet.} 5-6, 1874, p. 43
 (Polynesia). — Day, Fishes of India, pt. 1,
 1875, p. 105, plate 27, fig. 1 (Andamans).
 — Peters, Monatsb. Akad. Wiss. Berlin,
 1876, p. 437 (Mauritius). — Günther, Philos.
 Trans. Roy. Soc. London, vol. 168, 1879, p. 470
 (Rodriguez). — Meyer, Ann. Soc. Espan.
 Hist. Nat. Madrid, vol. 14, 1885, p. 17
 (Manado, Celebes; Cebu; Ternate). —
Day, Faun. British India, vol. 2, 1889, p. 4,
 fig. 1. — Elera, Cat. Faun. Filip., vol. 1, 1895,
 p. 486 (Luzon, Batangas, Masugbu, Cavite, Ilocos).

than pectoral base.

Sides with silvery band. (Kner.)

East Indies, Melanesia, Polynesia, Micronesia. Although no dimensions are given in the original account of this species by Kner his figure measures 133 mm.

The name Zenarchopterus kneri is here proposed for this species as Hemirhamphus brevirostris Günther, the hitherto accepted name, is preoccupied by Hemiramphus^h_A brevirostris Cuvier.

For Rudolf Kner, the distinguished zoologist of Vienna during the middle of the nineteenth century, who first describes and figures the present species.

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Chaetodon vagabundus Linnaeus.

Chaetodon vagabundus Linnaeus, Syst. Nat., ed. 10, 1758, p. 276. East Indies. — Linnaeus, l.c., ed. 12, 1766, p. 465. — Bloch, Naturges. Musl. Fisch., band 3, 1787, p. 88, plate 204, fig. 2 (East Indies). — Gmelin, Syst. Nat. Linn., 1789, p. 1251 (India). — Bloch, l.c., band 9, 1795, p. 100 (Tranquebar). — Walbaum, Arted. Pisc., vol. 3, 1792, p. 413 (on Linnaeus and Bloch). — Forster, Faun. Indica, 1795, p. 15. — Schneider, Syst. Ichth. Bloch, 1801, p. 222 (Indian Year). — Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 456, 479 (Asia). — Bennett, Fishes of Ceylon, 1828, plate 7. — Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. 38 (Hawaitia, Vanicolo, Moluccas, Amboina, Tahiti). — Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 25 (Hawaitia, Amboina). — Kaup, Arch.

Zenarchopterus philippinus (Peters)

Hemirhamphus (Zenarchopterus)
philippinus Peters, Monatsb. Akad.
Wiss. Berlin, 1868, p. 273 (type locality:
Quingoa River, Luzon; Calbigan, Samar).

Zenarchopterus philippinus Bleeker,
Atlas Ichth. Ind. Néerl., vol. 4, p. 63,
1866-72 (copied). — Evermann and Seale,
Bull. Bur. Fisher., vol. 26, p. 59,
1906 (1907) (Bacon). — Seale and Bean,
Proc. U. S. Nat. Mus., vol. 33, p. 240,
1907 (Zamboanga). — Fowler, Copeia,
no. 58, ^{p. 62,} June 18, 1918 (Philippines; part);
Proc. Acad. Nat. Sci. Philadelphia,
1919, p. 9 (Philippines).

number 20, 1908. Length 122 to 141 mm.

226. Endeavor Strait. December 24, 1908.

Length 161 mm.

4872. Galera Bay, Mindoro. June 9, 1908.

Length 112 mm.

554 and A1207. Gomomo Island. December 3, 1909. Length 130 to 137 mm.

4615, to 4617. Grande Island reef,

Subia Bay. January 8, 1908. Length 130 to 134 mm.

Hemiramphus (Zenarchopterus) kampeni

Weber, Nova Guinea, vol. 9, pt. 4, p. 554,
1913 (type locality: Kaiserin Augusta
River, Pioneer Bivak, northern New
Guinea).

Zenarchopterus kampeni Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4, p.
167, 1922 (Kaiserin Augusta River). —

Fowler, Mem. Bishop Mus., vol. 10, p. 78,
1928 (New Guinea); vol. 11, no. 5, p. 319,
1931 (New Lagoon, Solomon Islands).

Zenarchopterus kampenii Mohr, Zool.
Jahrbücher, Jena, vol. 52, p. 248, figs.
13-14^(anal fin), 1926 (Kaiserin Augusta River
and Ramux). — Duncker and Mohr,
Mitteil. Zool. Mus. Hamburg, vol. 42,
p. 127, 1926 (Kaiserin Augusta River).
? Hemiramphus buffonis (not Valenciennes)
Hase, Jena. Zeitschr. Naturw., vol. 51, p. 541,
1914.

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Zenarchopterus amblyurus (not Bleeker) Mohr,
Zool. Jahrb., Syst., vol. 52, p. 243, 1926
(part). Jena

Zenarchopterus dispar (not Valenciennes)
Fowler, Proc. Acad. Nat. Sci. Philadelphia,
1927, p. 263 (Philippines; part).

band 6, 1889, p. 22 (Zanzibar). — Sauvage,
Hist. Nat. Madagascar, Poiss., 1891, p. 340

(type). — Elera, Cat. Fauna Filip., pt. 1, 1895,
p. 532 (Cebu). — Gilchrist and Thompson,

Ann. South Afr. Mus., vol. 6, pt. 2, 1908, p. 185
(Natal). — Frang, Abhand. K. Bayer. Akad.

Wiss., band 4, suppl. band 1, 1910, p. 50

(Aburatsubo). — Pearson, Ceylon Adm.

Rep. Marine Biol., 1912-13, p. F42.

Rhomboides matoides Bleeker, Ned. Tijds.

Dierk., deel 1, 1863, p. 270 (Atapupu, Junior).

— Bleeker, Verslag. Akad. Wet. Amsterdam,

deel 2, ^{seriet} 2, 1868, p. 302 (Sangir). — Bleeker,

Verh. Akad. Wet. Amsterdam, deel 18, no. 3,

1879, p. 2 (Mauritius).

Hepatus matoides Jordan and Seale, Bull.

Bur. Fisher., vol. 26, 1906 (1907), p. 34 (Hoib).

— Jordan and Richardson, Bull. Bur. Fisher.,

vol. 27, 1907 (1908), p. 270 (Calayan and

Aparri). — Seale, Philippine Journ. Sci.,

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Depth $8\frac{3}{4}$ to $9\frac{1}{3}$, body moderately compressed; head $2\frac{2}{5}$ to $2\frac{1}{2}$, head from snout tip $3\frac{3}{4}$ to 4, width $2\frac{7}{8}$ to 3. Snout 3 to $3\frac{1}{5}$ in head from snout tip; eye 4 to $4\frac{3}{4}$, $1\frac{2}{5}$ to $1\frac{1}{2}$ in snout, 1 to $1\frac{1}{4}$ in interorbital maxillary extends $\frac{4}{5}$ to eye, length $3\frac{1}{4}$ to $3\frac{1}{2}$ in head ^{from snout tip}; interorbital 4 to $4\frac{1}{8}$, low, level. Gill rakers 3 or 4 + 10 or 11, $\frac{2}{5}$ to $\frac{1}{3}$ of gill filaments, which $1\frac{4}{5}$ in eye.

Scales 49 or 50 in axial lateral series from above gill opening to caudal base and 4 more on latter; 7 above, 1 or 2 below, 42 or 43 predorsal forward to end of snout, of which 31 or 32 forward to occiput. Dorsal and anal scaleless, caudal base scaly. Scales with 5 to 8 basal

Bleeker's figure is from an example 90 mm. long from Java, but it is given with D. XVII, 28; A. III, 19. It is shown without the dark transverse bands, but his description of them agrees with Zoa excelsa. As the ocellus is not mentioned it had likely disappeared. The figures by Cuvier and Günther show the adult, in which the fourth dorsal spine is greatly lengthened.

striae, little divergent; circuli moderate, little less distinct apically

D. I, 13, in males fourth branched ray extended somewhat or $2\frac{3}{4}$ or $2\frac{4}{5}$ in total head length, in females first branched ray longest or $5\frac{1}{4}$ to $5\frac{1}{2}$; A. I, 11 or I, 12, in males and females apparently first branched ray longest or $4\frac{3}{4}$ to $4\frac{7}{8}$; caudal $2\frac{1}{2}$ to $2\frac{3}{4}$, hind edge slightly concave, nearly truncate when expanded; least depth of caudal peduncle $8\frac{1}{2}$ to $8\frac{4}{5}$; pectoral 3 to $3\frac{1}{8}$; ventral $5\frac{1}{4}$ to $5\frac{1}{2}$, inserted about last third in space between hind eye edge and caudal base.

Light brown above, paler and with silvery tints on sides and below. Scales on back without dark edges. Silvery brown lateral

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one transverse black band on the body, though begins at largest dorsal spine and reaches breast before ventral origin. We feel convinced, however, that Brevoort's figure represents inaccurately his specimen. The absence of the dorsal ocellus and the broad dark vertical band across the tail from the last dorsal spine and soft dorsal to the hind part of the anal, may well have faded from his specimen. Brevoort is careful to state that "the second black band does not touch the opercle and the third unites with the second under the spinous dorsal"; the latter statement evidently an error? Brevoort gives the dorsal as X, 24.

band, bordered by dark brown line above its whole extent, greatest width between dorsal and anal half of eye. Iris dark gray, evidently silvery white in life. Dorsal and caudal brownish, ^{former also dark basally,} other fins paler.

Philippines. This species well described by Peters and my specimens agree entirely. Characteristic are the prolonged fourth branched dorsal ray, the increased dorsal rays and the structure of the anal. I fail to find any very tangible for maintaining Hemiramphus (Zenarchopterus) hamperi Weber as distinct. The fin structure as given by Mohr seems to me in agreement.

Pectoral pale or whitish. Ventral black.

Mauritius, East Indies, Riu Kiu, Polynesia. An examination of the type of Loa excelsa and a comparison with the figures published and purporting to represent it are worthy of some comment. Apparently Hemiochus macrolepidotus (non Linnaeus) Brevoort, represents an

Notes Japanese Fishes, 18, p. 15, plate 6, fig. 2. "Lew Chew".

example 44 mm. long. In a general way it differs in that its depth is shown as 2 (Loa excelsa with $1\frac{1}{2}$), fourth dorsal spine longest (Loa excelsa with third longest), dark ocular band extends along hind eye edge to cheek (crosses eye medially in Loa excelsa), only

2 examples. Laguna de Bay, at ³⁸⁷
head of River, Luzon. June 21, 1908.

Length 110 to 122 mm.

~~Lyra~~

A. N. S. P., nos. 48853 to 48858.

Philippines. Commercial Museum of Philadelphia. Length 135 to 149 mm.

A. N. S. P., nos. 33271 to 33275.

Tarlac, Bacon, Luzon. C. J. Pierson. Bureau of Fisheries. Length 74 to 140 mm.

third spine $1\frac{2}{5}$ to $1\frac{5}{6}$, fourth ray $1\frac{1}{5}$ to $1\frac{1}{4}$;
 least depth of caudal peduncle $2\frac{2}{3}$ to 3;
 caudal truncate to slightly emarginate,
 slightly convex or expanded, $1\frac{2}{5}$ to $1\frac{3}{5}$;
 pectoral 1 to $1\frac{1}{10}$; ventral 1 to $1\frac{1}{5}$.

Very pale brownish generally. Broad
 brown band includes predorsal, eyes,
 muzzle and chin; broken with pale
 loop up from nostrils to middle of
 interorbital and down on other side;
 pale transverse band across occiput
 below supraocular tubercle to upper
 eye edge. Second broad blackish-
 brown band from middle of spinous
 dorsal down to include pectoral base
 and most of post-ventral space.

Third transverse band obliquely from
 hind part of soft dorsal obliquely
 across tail to posterior half of anal.
 Anal narrowly bordered blackish.

Zenarchopterus basudensis new species (389)

Depth $8\frac{1}{4}$ to $8\frac{3}{5}$; head $2\frac{1}{4}$ to $2\frac{1}{3}$, head from snout tip $2\frac{4}{5}$ to $2\frac{7}{8}$, width $2\frac{2}{3}$ to $2\frac{4}{5}$. Snout $2\frac{7}{8}$ to 3 in head from snout tip; eye $4\frac{1}{5}$ to $4\frac{1}{4}$, $1\frac{1}{3}$ to $1\frac{1}{2}$ in snout, $1\frac{1}{5}$ to $1\frac{1}{4}$ in interorbital; maxillary reaches $\frac{7}{8}$ to eye, length $3\frac{1}{8}$ to $3\frac{1}{3}$ in head from snout tip; interorbital $3\frac{1}{4}$ to $3\frac{2}{5}$, low, only very slightly convex. Gill rakers 3 + 13, lanceolate, strong, $\frac{2}{5}$ of gill filaments, which $1\frac{2}{3}$ in eye.

Scales 53 or 54 in axial lateral series and 5 or 6 more on latter; 6 above lateral line to dorsal origin, 3 below, 32 or 33 predorsal forward to occiput.

Scales with 6 short marginal ^{slightly} basal (radiating) striae; circuli fine, largely basal.

D. I, 12, fifth branched ray in male prolonged or not quite reaching back far as tip of tenth branched ray when depressed or to end of last ray, length $3\frac{7}{8}$

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to 4 in total head length; A.
I, 11 or I, 12, sixth ray in male
expanded though not quite long as
first or anterior lobe, which $4\frac{1}{4}$
to $5\frac{1}{3}$ in total head, posterior
lobe shortest; caudal 3, very
slightly concave obliquely, when
expanded obliquely truncate; least
depth of caudal peduncle $8\frac{1}{5}$ to
 $9\frac{1}{4}$; pectoral $3\frac{1}{3}$ to $3\frac{1}{2}$; ventral
 $6\frac{1}{2}$ to $6\frac{1}{4}$, inserted much nearer
caudal base than pectoral base.

Back brown extending down

to axial bright silvery white
axial band fading imperceptably
pale with whitish tints below.

Sides of head and iris bright
silvery white, also posterior sides
of mandible. Beak dusky to
blackish. Dorsal and caudal
grayish, former with broad
blackish basal band. Other
fins all more or less whitish.

Diagnosis. Apparently distinct
in having the ~~fourth~~ fifth branched
dorsal ray prolonged and the structure
of the anal, in which the front lobe
largest.

♂ U.S. N. M., No. , type.

6 examples. Basud River, Luzon, in fresh water. June 15, 1909. Length 138 to 202 mm, largest type, others paratypes.

Zenarchopterus caudovittatus (Weber)

Hemiramphus (Zenarchopterus) caudovittatus
Weber, Nova Guinea, vol. 5, pt. 2, p. 229,
pl. 13, figs. 1a-b, 1908 (type locality:
Merauke River, New Guinea).
mouth of

Zenarchopterus caudovittatus Weber and
Beaufort, Fishes of Indo Austral.

Archip., vol. 4, p. 164, 1922 (type).

— Mohr, Zool. Jahrbücher, Jena,
vol. 52, p. 242, ^{fig. (d) (fin),} 1926 (Merauke,

New Guinea). — Fowler, Mem. Bishop
; Kuala Selangor

Mus., vol. 10, p. 78, 1928 (copied).

Depth 9 ~~10~~ ~~11~~, body compressed;
head $2\frac{3}{4}$, head front snout tip $4\frac{1}{4}$,
width $6\frac{1}{3}$. Snout $2\frac{1}{3}$ in head from
snout tip; eye $5\frac{3}{8}$, $2\frac{7}{8}$ in snout,
subequal with interorbital; maxillary
about $2\frac{1}{3}$; interorbital about $4\frac{1}{2}$,
low, level.

Scales 43 in axial lateral series
from head to caudal base medially
and 3 more on latter; 5 above, 32

predorsal forward to occiput over gill opening. Dorsal and anal scaleless, caudal base scaly.

D. I, 11, first branched ray $4\frac{1}{2}$ in total head; A. II, 10, second branched ray $4\frac{1}{5}$; caudal $2\frac{1}{3}$, convex behind; least depth of caudal peduncle $6\frac{2}{3}$; pectoral $2\frac{1}{2}$; ventral about 5, origin near last third in space between front eye edge and caudal base.

Brownish. Light lateral axial streaks or line above pectoral origin and gill opening to caudal base, from below dorsal as blackish streaks and on caudal base as 2 or 3 short vertical bars or spots medially. Eye dark. Fins pale, front anal edge and lower caudal edge dark.

Length 160 mm. (Weber.)

262. Tutu Bay, Jolo, second anchorage.
September 19, 1909. Length 115 mm.

52523 U.S.N.M. Samoa. Bureau of
Fisheries. Length 76 to 134 mm. 3 examples

New Guinea, fresh waters.

According to Mohr the ~~dark~~ dorsal rays are of equal and uniform height and only the fourth anal ray expanded terminally, apparently not forming a distinct median section to the fin.

6789. Malampa Island. April 29, 1909.
Length 165 mm.

6241, 6272, 6278. Medio Island, Galera Bay, Mindoro. June 9, 1908. Length 148 to 150 mm.

8901. Near Palag Bay, Luzon. June 16, 1909. Length 146 mm.

447. Pandanan Island. March 23, 1909.
Length 84 mm.

4778. Port Maricaban. July 21, 1908.
Length 140 mm.

724. Port Palapay. June 3, 1909.
Length 118 mm.

9312. Salino Island. April 10, 1909.
Length 159 mm.

1 example. Zubie Bay. January 7, 1908. Length 26 mm.

486. Talissi Island. November 9, 1909.
Length 120 mm.

999, 1000, 1001. Tataan, Simalur Island.
February 20, 1908. Length 100 to 121 mm.

4979. Tataan Island. February 21, 1908. Length 147 mm.

5829. Tataibada Bay. May 15, 1908.
Length 128 mm.

Zenarchopterus ectunctio (Buchanan-Hamilton)

Esox ectunctio Buchanan-Hamilton,
Fishes of Ganges, pp. 212, 380, 1822
(type locality: smaller rivers and
ponds of Gangetic provinces). — Hora,
Mem. Ind. Mus., vol. 9, no. 4, p. 188, pl. 21, fig. 1, nov.
1929.

Hemiramphus ectunctio Bleeker, Verh.
Batavia. Genoot. (Beng. Hind.), vol. 25,
p. 14, 1853 (on Buchanan-Hamilton).
— Blyth, Proc. Asiatic Soc. Bengal,
vol. 27, p. 287, 1858.

Hemiramphus ectunctio Day, Fishes of
India, pt. 3, p. 517, pl. 119, fig. 6, 1877;
Fauna British India, Fishes, vol. 1,
p. 427, 1889.

Hemiramphus ectunctio Vinciguerra,
Ann. Mus. Civ. Genova, ser. 2, vol. 9,
p. 349, 1890 (Rangoon).

Zenarchopterus ectunctio Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4, p.
165, 1922 (Samarinda and Ribo River, Borneo).

— Fowler, Hong Kong Naturalist, vol.
3, nos. 3-4, p. 270, fig. 15, Dec.
1932 (East Indies).

(Okinaua). — Beaufort, Bijdr. Dierk. Amsterdam, deel 19, 1913, p. 125 (Vorang, New Guinea). — Weber, Siboga Exped., band 65, 1913, p. 310 (Tual and Postillen Island). — McCulloch, Austral. Zoologist, vol. 2, pt. 3, February 10, 1922, p. 91, plate 27, fig. 232 (New South Wales). — Fowler, Proc. Acad. Nat. Sci. Phila., 1925, p. 252 (Natal). — Fowler, Bishop Mus. Bull., no. 22, 1925, p. 28 (Honolulu).

Chaetodon macrolepidotus Linnaeus, Syst. Nat., ed. 10, 1758, p. 274. Indies. — Linnaeus, l.c., ed. 12, 1766, p. 464. — Bloch, Naturges. Musl. Fische, band 3, 1787, p. 69, plate 100, fig. 1 (East Indies). — Gmelin, Syst. Nat. Linn., 1789, p. 1247 (Indies). — Walbaum, Arted. Pisc., vol. 3, 1792, p. 416 (on Linnaeus and Bloch). — Forster, Faun. Indica, 1795, p. 15. — Blumenbach, Handb. Nat., 1799, p. 275. — Schneider, Syst. Ichth. Bloch,

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Hemiramphus amblyurus Bleeker,
Verh. Batavia. Genoot. (Madura),
vol. 22, p. 11, 1849 (type locality:
Madura Straits near Kammal and
Surabaya); p. 5 (Kammal). —

Steindachner, Sitzs. Ber. Akad. Wiss.
Wien, vol. 55, pt. 11, p. 592, 1867
(Hong Kong). — Weber, Zool. Ergebn.

Reise ned. Ost Ind., vol. 3, p. 456, 1894
(Borneo, Sumatra, Madura).

Hemiramphus amblyurus Günther,
Cat. Fishes Brit. Mus., vol. 6, p. 273,
1866 (Siam; type). — Károli, Termesz.
Fuzetek, Budapest, vol. 5, p. 152, 1881
(Change, Siam). — Macleay, Proc.

Linn. Soc. New South Wales, ~~vol. 5~~ vol. 5,
pt. 2, p. 184, 1881 (Port Darwin). —

Volz, Zool. Jahrb. Abth. Syst., vol. 19, p.
395, 1903 (Sumatra); Nat. Tijds. Nederl.
Indië, vol. 56, p. 179, 1907 (Palembang).

Zenarchopterus amblyurus Bleeker,
Nederl. Tijds. Dierk., vol. 3, p. 160,
1866 (Java, Madura, Borneo, Sumatra);
Atlas Ichth. Ind. Néerl., vol. 6, p. 61,
pl. (4) 250, fig. 1, 1866-72 (same
localities). — Fowler, Proc. Acad.

Nat. Sci. Philadelphia, 1905, p. 494
(Baram, Borneo). — Tuohy, Zool. Jahrbücher, Syst.,
vol. 52, p. 243, 1926 (Muar River; Kuala Belangor; Sumatra,
Borneo; Formosa).

Hemiramphus borneensis Bleeker, Nat.
Tijds. Ned. Indië, vol. 1, p. (260, 262)
273, 1850 (1851) (type locality:
Bandjermassing); vol. 2, p. (58, 63) 64
(194), 1851 (Bandjermassing); Verh.
Batavia. Genoots. (Snedk. Vissch.),
vol. 24, p. 25, 1852 (Bandjermassing);
Nat. Tijds. Ned. Indië, vol. 3, p. 409,
1852 (Bandjermassing); vol. 8, p. 152,
1855 (Bandjermassing); vol. 9, p. 418,
1855 (Bandjermassing); vol. 16, p. 338,
1858 (Palembang, Sumatra); Act. Soc.
Sci. Ind. Néerl. (lechst Sumat.), vol. 8,
p. 55, 1859 (Palembang); Nederl. Tijds.
Dierk., vol. 2, p. 35, 1865 (Siam); p. 176
(Siam; copied).

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Hemirhamphus bleekeri Kner, Vitz.
Ber. Akad. Wiss. Wien, math.-nat.
Kl., vol. 39, p. 539, fig. 4, 1860 (type
locality : no locality).

Hemirhamphus neglectus (not Bleeker)
Day, Proc. Zool. Soc. London, 1869, p.
326.

? Hemiramphus rasori Poeyta, Notes
Leyden Mus., vol. 34, p. 192, 1912
(Type locality: Rahat Muna,
Celebes).

Zenarchopterus rasori Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4,
p. 166, 1922 (type).

Zenarchopterus hendersoni Fowler, Proc.
Acad. Nat. Sci. Philadelphia, 1919, p.
8, fig. 2 (type locality: "Japan" [possibly
erroneous for East Indies]).

Zenarchopterus clarus Wooh, Zool. Jahrbücher,
Nyst., vol. 52, p. 241, 1926 (type locality:
Bangkok).

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Depth $11^?$ to $12^{3/4}$, back rather broad, flattened sides somewhat approximated below; head $2^{1/5}$ to $2^{1/2}?$, head from snout tip $3^{4/5}$ to 4, width $3^{3/4}$ to 4. Snout $2^{1/4}$ to $2^{1/2}$ in head from snout tip; eye 5 to $5^{1/4}$, 2 to $2^{1/3}$ in snout, $1^{1/5}$ in interorbital; maxillary reaches about $7/8$ in snout, length $2^{1/2}$ to $2^{3/5}$ in head from snout tip; interorbital $4^{1/5}$ to $4^{1/4}$, low, level. Gill rakers 5 + 11, lanceolate, $2/3$ of gill filaments, which $2^{1/3}$ in eye.

Scales 45 or 46 in lateral axial series from above gill opening to caudal base and 3 or 4 more on latter; 5 above ^{lateral line}, 1 below, 45 predorsal forward to front of snout of which extend forward far as gill opening. Vertical fins with few small scales anteriorly about bases, caudal scaly basally. Scales with

634
710. Maricaban Island. January 20,
1908. Length 66 mm.

8598. Matnog Bay. May 31, 1909.
Length 150 mm.

6242. Medio Island, Galera Bay,
Mindoro. June 7, 1908. Length 125 mm.

719 and 8898. Near Palap Bay. June 16, 1909.
Length 150 to 167 mm.

7944 and 7981. Tagapur Bay, Luzon.
February 20, 1909. Length 163 to 175 mm.

1317. Polloc. May 23, 1909. Length
134 mm.

8207. Port Busin, Burias Island.
March 8, 1909. Length 170 mm.

5763. Port Capinunguyan, Mindanao.
May 10, 1908. Length 186 mm.

8388. Port Dupin, Leyte. March 17, 1909.
Length 157 mm.

8271. Port Juelo, Luzon. July 13, 1908.
Length 85 mm.

4 to 6 basal radiating striae; circuli moderate, basal, obsolete apically.

D. I, 12, first branched ray $6 \frac{3}{4}$ to $7 \frac{1}{2}$ in ^{total} head ^{length}; A. II, 9, first branched ray $5 \frac{1}{2}$; caudal $3 \frac{1}{5}$, rounded behind; least depth of caudal peduncle 8; pectoral $4 \frac{1}{2}$? to 5; ventral $8 \frac{1}{4}$ to $8 \frac{1}{2}$, inserted slightly behind last third in space between hind eye edge and caudal base.

Brownish, lower surfaces little paler and with silvery tints. Under lens back seen sprinkled with fine dark dots. Iris and sides of head silvery white. Obscure gray line axial along side, borders very narrow silvery white band on side of tail between dorsal and anal, where wide as pupil. Top

3630. Busin Harbor. March 8, 1909.

Length 107 mm.

8371. Curadran, Batuan Island.

June 8, 1909. Length 170 mm.

5352. Cebu market. April 4, 1908. Length 131 mm.

7555 and 7556. Endeavor Strait. December

23, 1908. Length 168 to 190 mm.

8244 to 8251. Salwaney, Ragay Gulf, Luzon.

March 9, 1909. Length 156 to 171 mm.

5197. Jolo market. March 7, 1908.

Length 165 mm.

509. Langa Point. June 21, 1909. Length 128 mm.

4750. Ligo Point, Balayan Bay, Luzon.

January 18, 1908. Length 90 mm.

8448. Mactan Island, Cebu. March 25,

1909. Length 170 mm.

8881. Mansalay, Mindoro. June 4, 1908.

Length 131 mm.

3892. Maribojoc Bay, Bohol. March 26, 1909.

Length 77 mm.

of head, snout and beak brownish
Dorsal and caudal tinted with
brownish terminally, other fins
more or less whitish.

India, Burma, Malaya, Siam,
East Indies, China, Formosa, North
Australia. Although Zenarchopterus
hendersoni Fowler is likely a
synonym as Mohr doubtfully
suggests the original label still
clearly shows "Japan" as the locality.

Possibly it may have been obtained
somewhere in the East Indies?

8150. Alibijaban Island, Ragay Gulf.
March 6, 1909. Length 160 mm.

^{578,}
1286 and 1287. Ilimango Bay. March 5,
1909. Length 88 to 114 mm.

17751. Bulikias Bay, Lubang Island.
July 17, 1908. Length 120 mm.

4822. Batan Island. June 5, 1909.
Length 98 mm.

8951. Between Paron and Jesus Points,
Albany Gulf, Luzon. June 21, 1909. Length
152 mm.

8559. Bolinao. May 10, 1909. Length 175 mm.

8351. Breang Bay, Salajik Island.
March 15, 1909. 2 exemplars. Length 160 to 171 mm.

5640, 5668, 5676, 5679. Busin Harbor,
Buwian Island. April 22, 1908. Length 160 to
175 mm.

819, 868, ^{1156.} Busin Harbor. April 23, 1908.
Length 82 to 104 mm.

Zenarchopterus clarus Mohr

based on two females 150 to 165 mm, is likely this species. It is described with upper jaw twice as long as broad, D. 13. or 14, A. 11.

A. N. S. P., no. 7584. "Japan".

Dr. A. A. Henderson. Length 142 mm. Type of Zenarchopterus hendersoni.

A. N. S. P., no. 55972. Barau,

British North Borneo. 1898. Dr.

W. H. Furness 3rd. Wistar Institute of Anatomy. Length 140 mm. to end of broken beak.

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Heniochus permutatus Cuvier.

Heniochus permutatus (E. Bennett) Cuvier,
Hist. Nat. Poiss., vol. 7, 1831, p. 75. no locality
(Collection Zoological Society of London).

Heniochus chrysostomus Cuvier, l.c. Tahiti.

— Valenciennes, Règne Animal, Poiss. Ill.,
1839, plate 40, fig. 2 (~~Heniochus~~). — Lay and
Bennett, Zool. Beechey's Voy., 1839, p. 62,
plate 18, fig. 1 (Tahiti). — Günther,
Journ. Mus. Godeffroy, band 2-3 (5-6), 1874,
p. 49, plate 39, fig. 11 (Pinnacles and Society
Islands). — Steindachner, Sitzb. Akad. Wiss.
Wien, band 102, heft 1, 1873, p. 226, plate 2, fig.
1 (Tsilutgar, juva). — Weber, Siboga Exped.,
band 65, 1913, p. 310 (Saleyer). — Cocherel, Mem.
Queensland Mus., vol. 3, 1915, p. (Queensland).
— Uhl, Arch. Naturges., band 89, abth. A, heft 5,
1923, p. 30 (Rabon, Thilenius Harbor, New
Guinea, Sumon, Madras).

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Genus Hyporhamphus Gill

Hyporhamphus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1859, p. 131. (Type Hyporhamphus tricuspidatus Gill, monotypic.)

Eulepidorhamphus Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 7. (Type Hemiramphus sajori Schlegel, orthotypic.)

Body elongate, but moderately compressed, sides swollen more or less convex, not flattened. Young with lower jaw short, long and beak like with age. Teeth feeble, mostly tricuspid. Air bladder large, simple, not cellular. Dorsal and anal alike, opposite, not modified in male, last dorsal ray usually short. Caudal

mostly forked, lower lobe longer.
Ventral small, inserted well
forward, nearly midway between
opercle and caudal base.

Numerous species in all warm
seas, living in large schools
usually not far from shore. Food
largely green algae.

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Hyporhamphus gernaerti (Valenciennes)

Hemiramphus gernaerti Valenciennes,
Hist. nat. Mus., vol. 19, p. 43, 1846 (type
locality: China, Macao).

Hemiramphus gernaerti Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 268, 1866
(copied). — Bleeker, Nederl. Tijds.
Dierk., vol. 4, p. 149, 1873 (reference).
— Elera, Cat. Fauna Philip., vol. 1, p.
575, 1895 (Luzon, Manila, Navotas).

Hyporhamphus gernaerti Chu, Biol.
Bull. St. John's Univ., no. 1, p. 86,
Jan. 1931 (reference). — Fowler, Hong
Kong Naturalist, vol. 3, nos. 3-4, Dec. 1932,
p. 265 (compiled).

Beaks ~~measured beyond end of~~
~~upper jaw~~ 5, in total length
~~to caudal base~~;
 teeth fine, pointed; interorbital
 equals eye. D. 13; A. 15; both
 dorsal and anal small and low;
 caudal but little forked. Belly
 brown like back. Flanks silver
 gray. Lateral band very broad
 between dorsal and anal. Length
 178mm. (Valenciennes)

This little known species not
 seen since originally described.
 The short beak and few fin
 rays appear to be characteristic
 features.

Genus Vinculum McCulloch.

Vinculum McCulloch, Biol. Res. Endeavour, vol. 2, pt. 3, 1914, p. 110. Type Chaetodon sexfasciatus Richardson, monotypic.

Differs from Microcanthus largely in its minute scales, more than 70. Likewise its color pattern entirely different, the body marked with vertical bands.

Paracoradion Ahl, Arch. Naturges., band 89, abth. A, heft 5, 1923, pp. 47, 107.

Type Chaetodon cellipinnis Nucleay, monotypic.

Analysis of Species

a. Hyporhamphus. Scales 40 to 60 in lateral series.

b. Ventral origin midway between front edge or hind edge of eye and caudal base.

c. Caudal with hind edge black.

d. Head from snout tip $3 \frac{1}{5}$.

d.² Head from upper jaw tip $3 \frac{1}{2}$ to $3 \frac{2}{3}$. unifasciatus.

c.² Caudal tips black; head from snout tip $3 \frac{2}{3}$ to 4. gaimardi.

c.³ Caudal uniform, without black. melanurus.

e. No black spot at pectoral base.

f. Upper jaw broader than long; D. 15 or 16; A. 15 to 18; scales 55 to 58.

g. Head $3 \frac{1}{5}$; Australian. regularis.

g.² Head $2 \frac{2}{3}$; Chinese. sinensis.

f.² Upper jaw long as wide; D. 14; A. 15; scales 50 to 55. sinensis.

f.³ Upper jaw little longer than wide; D. 15; A. 16; scales 56 to 58.

e.² Faint black spot at pectoral base. xanthopterus.
ardelis.

b.² Ventral origin more posterior, midway between gill opening and caudal base.

h.¹ Anal rays 12 to 14. quoyi.

h.² Anal rays 16 to 18.

i.¹ Head $2\frac{1}{2}$ to $2\frac{2}{3}$. balinensis.

i.² Head $2\frac{2}{3}$ to $2\frac{3}{4}$. pacificus.

i.³ Head over 3. acutus.

a.² Eulepidorhamphus. Scales 90 to 106; D. 16; A. 16 or 17. sayori.

Hyporhamphus unifasciatus (Ranzani)

Hemiramphus unifasciatus Ranzani,
Nov. Comm. Acad. Sci. Bonav., vol. 5,
p. 326, 1842 (type locality: Brazil).
(error).

Hemiramphus unifasciatus Günther,
Cat. Fish. Brit. Mus., vol. 6, p. 262,
1866 (Mauritius; East Indies). —
Bleeker, Atlas Ichth. Ind. Néerl., vol.
6, p. 59, 1866-72 (Java, Sumatra,
Amboina). — Day, Fishes of India,

pt. 3, p. 514, 1877; Fauna of British
India, Fishes, vol. , p. , 1889. —
Volz, Naturk. Tijds. Nederl. Indië, vol.
46, p. 178, 1907 (Padang). — Weber,

Siboga Exped., vol. 57, Fische, p. 131,
1913 (south east Timor). — Weber and
Beaufort, Fishes Indo Austral. Archip.,
vol. 4, p. 149, 1922 (Java Sea; Samarang;
Batavia; Weber's material). — Duncker
and Mohr, Mitteil. Naturk. Mus. Hamburg,
vol. 42, p. 126, 1926 (Hansa Bay, New Guinea).

Hemiramphus unifasciatus Sauvage,
Hist. nat. Madagascar, Poiss., p. 526,
1891 (reference). — Day, Fauna

British India, Fishes, vol. 1, p. 426,
1889. — Fowler, Proc. Acad. Nat. Sci.

Philadelphia, 1927, p. 261 (San Fernando,
Zigan, Orani, Philippines); Mem.

Bishop Mus., vol. 10, p. 75, 1928

(compiled); Ann. Natal. Mus., vol.
6, pt. 2, p. 250, May 1929 (False Bay,
Natal); Proc. U.S. Nat. Mus., vol. 80, art. 6,
p. 6, 1932 (Charles Island, Galapagos).

Hemiramphus neglectus Bleeker, Nederl.
Tijds. Dierk., vol. 3, p. 157, 1866 (Java,
Sumatra, Amboina); Atlas Ichth.
Ind. Néerl., vol. 6, pl. (8) 254, fig. 5,
1866-72.

Hemiramphus neglectus Jordan and
Richardson, Bull. Bur. Fisher., vol.
27, p. 243, 1907 (1908) (Aparri).

Hyporhamphus neglectus Fowler,
Journ. Acad. Nat. Sci. Philadelphia,
ser. 2, vol. 12, p. 501, 1904 (Padang);
Proc. Acad. Nat. Sci. Philadelphia,
1919, p. 6 (Padang material).

? Hemiramphus calabarius Günther,
Cat. Fish. Brit. Mus., vol. 6, p. 266,
1866 (type locality: Old Calabar and
West Africa).

? Hemiramphus schlegeli Bleeker, Nat.
Verh. Maats. Wet. Haarlem, vol. 18,
p. 120, pl. 25, fig. 1, 1863 (type locality:
Guinea, Ora-aurifer).

Hemiramphus capensis Thomiot, Bull.
Soc. Philomath. Paris, ser. 7, vol. 10, p.
166, 1886 (type locality: Cape of Good
Hope).

Dermatogenys viviparus (not Peters)
Fowler, Rafflesia, no. 58, p. 62, June 18,
1918 (Philippines; part).

? Hemirhamphus (Hyporhamphus)
delagoae Barnard, Ann. South Afr.
Magn. Nat. Hist., ser. 9, vol. 15, p. 498,
 1925 (type locality; Delagoa Bay);
Ann. South Afric. Mus., vol. 21, p. 263,
 pl. 10, fig. 6, 1925.

Hemirhamphus delagoae Barnard,
Ann. South Afric. Mus., vol. 21, pt. 2,
 p. 1022, Oct. 1927 (reference).

Depth $8\frac{3}{4}$ to $9\frac{3}{5}$, compressed, sides flattened; head $2\frac{1}{2}$ to $2\frac{3}{4}$, head $4\frac{1}{6}$ to $4\frac{1}{3}$ in length from snout tip, width 3 to $3\frac{1}{8}$. Snout $2\frac{3}{4}$ to $2\frac{4}{5}$ in head from snout tip; eye $3\frac{3}{5}$ to $3\frac{2}{3}$, $1\frac{1}{3}$ to $1\frac{2}{5}$ in snout, subequal with or slightly greater than interorbital; maxillary reaches $\frac{3}{4}$ in snout to eye, length $3\frac{2}{5}$ to $3\frac{1}{2}$ in head from snout tip; interorbital $3\frac{3}{4}$ to 4, level. Gill rakers $10 + 19$ to 21, lanceolate, $\frac{1}{2}$ of gill filaments, which $1\frac{4}{5}$ in eye.

Scales (pockets) 54 to 56 in axial lateral series from above gill opening to caudal base and 6 or 7 more on latter; 5 above, 2 below, 32 or 33 predorsal forward to occiput. Vertical fins covered with

71515 U.S.N.M. Tanegashima, Japan.
Albatross Collection 1906. Length 40 to 48 mm.
2 examples.

71732 U.S.N.M. Kaga, Okinawa, Riu
Kiu. Albatross Collection 1906. Length
25 to 38 mm. 2 examples.

71944 U.S.N.M. Misaki, Sagami Bay,
Japan. Albatross Collection 1906. Length
26 mm.

small scales basally. Scales with 3 short basal, ^{slightly} radiating striae; circuli rather fine, especially apically.

D. II, 13, first branched ray $4\frac{1}{4}$ to $4\frac{1}{2}$ in total length of head; A. II, 14 or II, 15, first branched ray $4\frac{1}{5}$ to 5; caudal $1\frac{7}{8}$ to $2\frac{1}{5}$, well forked behind with lower lobe longer; least depth of caudal peduncle $7\frac{3}{4}$ to 8; pectoral $2\frac{7}{8}$ to 3; ventral $5\frac{3}{4}$ to 6, origin about midway between vertical edge of preopercle and caudal base.

Back brown, sides and below paler. Iris and side of head silvery white. narrow silvery white streaks from above pectoral base to middle of caudal base, greatest

30649 U.S.N.M. New Guinea.
Australian Museum. Length 99 mm.

30652 U.S.N.M. New Guinea.
Australian Museum. Length 117 mm.

32732 U.S.N.M. Indian Archipelago.
Leiden Museum. Length 108 mm.

41551 U.S.N.M. Samoa. Dr. C.H.
White. Length 135 mm.

41562 U.S.N.M. Samoa. Dr. C.H. White. Length 43 mm.

43935 U.S.N.M. Mauritius. Colonel
Nicholas Pike. Length 77 to 150 mm.
9 examples.

52497 U.S.N.M. Apia, Samoa.
Bureau of Fisheries. Length 22 to 144 mm.
10 examples.

55957 U.S.N.M. Bacon, Philippines.
Bureau of Fisheries. Length 135 mm.
[3387].

61701 U.S.N.M. Mauritius. Colonel
Nicholas Pike. Length 154 to 148 mm.
2 examples.

width between $\$$ dorsal and anal
about equals pupil diameter,
and sometimes edged all along
above by narrow gray bordering
line. Fins all pale brown.

South Africa, Natal, Mauritius,
Portuguese East Africa, India,
East Indies, Philippines. Also
in the Eastern Pacific, about the
Galapagos and west coast of Mexico,
and in the Atlantic, both the
West Indies and West Africa.

525
A 1267. Uai, Bouru Island, Dutch
East Indies. December 9, 1909. Length
150 mm.

A 1599. Soo Wan, Formosa. January 29,
1910. Length 140 mm.

654, 655, 660, 661. Nan Wan, Formosa,
January 25, 1910. Length 110 to 155 mm.

665 and 673. Hokuko, Soo Wan. January
29, 1910. Length 130 to 148 mm.

A. N. S. P., No. 27463. Padang,
Sumatra. A. C. Harrison and H. M.
Hiller. Length 135 mm.

A. N. S. P., No. 51333. Colombo, Ceylon.
1924. Prof. F. Hallberg. Purchased.
Length 135 mm.

627

Heniochus varius (Cuvier).

Saurichthys varius Cuvier, Règne Animal, vol. 2, 1829, p. 192. East Indies. (du Renard, Poiss. Mooloujes, vol. 1, 1718, plate 30, fig. 164; vol. 2, plate 10, fig. 49.) — Valenciennes, Règne Animal Cuv. Poiss., Ill., 1839, plate 41, fig. 2 (~~1~~). — Bleeker, Atlas Ichth. Ind. Néerl., vol. 9, 1877, p. 27, plate (3) 365, fig. 2 (Batu, Java, Celebes, Timor, Amboina, Ceram, Banda). — Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 27 (Bacon).

Heniochus varius Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 41 (Molucca Sea and Amboina). — Kner, Reise Novara Fisch., 1866, p. 103 (no locality). — Günther, Cruise of Curaçoa, Breckley, 1873, p. 410 (Misol, Moluccas). — Meyer, Ann. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 17 (Macassar, Celebes). — Uhl, Arch. Naturges., band 89,

Hyporhamphus gaimardi (Valenciennes)

~~Hyporhamphus gaimardi Valenciennes~~,
Verh. Batavia. Genoot. (Snoek. Visch.),
vol. 24, p. 20, 1852 (Batavia); Natuurk.
Tijds. Ned. Indië, vol. 3, p. 489,
(Pamangbat), p. 445 (Banka), p. 722
(Borneo), 1852.

227, 1854 (Macassar); vol. 9, p. 283,
1855 (Macassar); vol. 12, p. 193, 1856
(Ternate), p. 217 (Nias); Act. Soc.
Sci. Ind. Néerl., vol. 1, no. 3, p. 6,
1854

vol. 16, p. 273 (Benkoelan), 1858; Act.
Soc. Sci. Ind. Néerl. (Acht. Sumat.),
vol. 8, p. 55, 1859 (Benculen, Padang,
Priaman).

Fische, p. 323, 1865 (Java, Madras,
Sydney); — Bleeker, Atlas Ichth.

Ind. Néerl., vol. 6, p. 60, pl. () 253, fig. 5,
1866-72 (Java, Sumatra, Nias, Pinang,
Singapore, Bintang, Banka, Borneo,
Celebes, Ternate, Amboina, New Guinea).

Hyporhamphus gaimardi (Valenciennes)

Hemiramphus gaimardi Valenciennes,
Hist. nat. Poiss., vol. 19, p. 362, 1846
(type locality: Moluccas; Amboina;
New Guinea; Port Jackson). —

Bleeker, Natuurk. Tijds. Ned. Indië,
vol. 2, p. 472, 1851 (Rio); vol. 7, p.
227, 1854 (Macassar); vol. 9, p. 283,
1855 (Macassar); vol. 12, p. 193, 1856
(Ternate), p. 217 (Nias); Act. Soc.
Sci. Ind. Néerl., vol. 1, no. 3, p. 6,
1856 (Manado); vol. 2, no. 7, p. 7,
1857 (Amboina); vol. 3, no. 9, p. 3,
1857-58 (Padang); Natuurk. Tijds.
Ned. Indië, vol. 15, p. 243, 1858
(Singapore). — Kner, Reise Novara,
Fische, p. 323, 1865 (Java, Madras,
Sydney); — Bleeker, Atlas Ichth.

Ind. Néerl., vol. 6, p. 60, pl. () 253, fig. 5,
1866-72 (Java, Sumatra, Nias, Pinang,
Singapore, Bintang, Banka, Borneo,
Celebes, Ternate, Amboina, New Guinea).

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Pseudochromis (Pseudochromis) yanthou Wet.

Bleeker, Verh. Kon. Akad. Wet.
Amsterdam, no. 5, vol. 15, 1875, p. 11

(Bawean, Celebes, Borneo).

Malacocanthus coccinicauda (Jin)

Day, Fishes of India, Suppl., 1856

191. Saddle Island, off Kyauk, 1857

Malacocanthus bicolor (Jickell)

1857-58 (Fishes of India, p. 11)

Hemiram
Hist. Nat.
(type loca
New Guin

Bleeker, h
vol. 2, p.
227, 1854

1855 (Traco
(Ternate),
Sci. Ind

1856 (Mar
1857 (Am
1857-58 (

Fishes of India
(Singapore
Fishes, p.

— Weber, Zool. Ergebn. Reise. Ned. Ost Ind., vol. 2, p. 456, 1894 (Singapore, Borneo, Banca, Sumatra, Nias, Java, Celebes, Amboina, Ternate). — Fowler,

New. Bishop Mus., vol. 10, p. 75, 1928 (Guam).

Hemirhamphus gaimardi Günther, Cat. Fish. Brit. Mus., vol. 6, p. 263, 1866 (East Indies). — Volz, Naturk. Tijds.

Ned. Indië, vol. 66, p. 178, 1907 (Priaman, Padang, Benkulen). — Seale, Philippine

Journ. Sci., vol. 5, no. 4, p. 267, Oct. 1910 (Borneo). — Weber and Beaufort, Fishes

Indo Austral. Archip., vol. 4, p. 150, 1922 (Bagan Lapi Lapi, Java Sea; Batavia, Semarang, Java; Madura; Balikpapan and Kota Baru, Borneo).

Hemirhamphus gaimardii McCulloch, Fishes New South Wales, ed. 2, p. 31, 1927 (reference to Port Jackson record).

Hemiramphus limbatus Valenciennes,
Hist. Nat. Poiss., vol. 19, p. 44, 1846
(type locality: Malabar; Pondicherry).

— Bleeker, Verh. Batavia. Genoots.

√ (Beng. Hind.), vol. 25, p. 72, 1852

^ (Snoek. Vissch.), vol. 24, p. 27, 1852 (Pinang;
on Cuntor);

Bull. Bur. Fisher., vol. 27, p. 243, 1907
(1908) (Cuyo). — Fowler, Proc. Acad.

Nat. Sci. Philadelphia, 1918, p. 3
(Philippines); Copeia, no. 58, p. 62,
June 18, 1918 (Philippines); Proc.
Acad. Nat. Sci. Philadelphia, 1927, p.
261 (Philippines). — Wu, Contrib. Biol.

Lab. Sci. Soc. China, vol. 5, no. 4, p. 64,
fig. 52, 1929 (Amoy).

Hemiramphus limbatus Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 272, 1866
(Ceylon; Pinang). — Day, Fishes of
India, pt. 3, p. 516, pl. 119, fig. 3, 1877;
Fauna British India, Fishes, vol. 1,

Hemiramphus limbatus Valenciennes,
Hist. nat. Poiss., vol. 19, p. 44, 1846
(type locality: Malabar; Pondicherry).

— Bleeker, Verh. Batavia. Genoots.
v (Beng. Hind.), vol. 25, p. 72, 1853
(compiled). — Day, Fishes of Malabar,
p. 169, 1865. — Jordan and Richardson,

Bull. Bur. Fisher., vol. 27, p. 243, 1907
(1908) (Cuyo). — Fowler, Proc. Acad.

Nat. Sci. Philadelphia, 1918, p. 3
(Philippines); Copeia, no. 58, p. 62,
June 18, 1918 (Philippines); Proc.
Acad. Nat. Sci. Philadelphia, 1927, p.
261 (Philippines). — Wu, Contrib. Biol.

Lab. Sci. Soc. China, vol. 5, no. 4, p. 64,
fig. 52, 1929 (Amoy).

Hemiramphus limbatus Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 272, 1866
(Ceylon; Pinang). — Day, Fishes of
India, pt. 3, p. 516, pl. 119, fig. 3, 1877;
Fauna British India, Fishes, vol. 1,

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op. cit., Suppl., 1888, p. 791. Hadda
Island.

1888
✓ (Bang. H.
(compiled
p. 169, 18

Bull. B.

p. 426, 1889. — Duncker, Mitteil. Zool. Mus. Hamburg, vol. 21, p. 170, 1903 (1904) (Singapore); vol. 29, p. 257, 1911 (Vakivilla, Ceylon)
Hyporhamphus limbatus Fowler, Hong Kong Naturalist, vol. 3, nos. 3-4, p. 266, fig. 11, Dec. 1932 (Amoy).
Hemiramphus tridentifer Cantor, Journ. Asiatic Soc. Bengal, vol. 78, pt. 1, p. 1231, 1849 (1850) (type locality: Pinang). — Bleeker, Natuurh. Tijds. Ned. Indië, vol. 1, p. 481, 1850 (1851), (copied).

Hemiramphus brachynopterus (not Bleeker) Blyth, Proc. Asiatic Soc. Bengal, vol. , p. 288, 1858.

Hemiramphus viridis (Van Hasselt; not 1823?) Bleeker, Atlas Ichth. Ind. Néerl., vol. 6, p. 60, 1866-72 (name in synonymy).

Elox angulatus (Buchanan-Hamilton) Day, Fishes of India, pt. 3, p. 516, 1877 (name in synonymy).

Dermatogenys viviparus (not Peters) Fowler, Copeia, no. 58, p. 62, June 18, 1918 (Philippines; part).

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Depth $7\frac{2}{3}$ to 10, rather robust to subcylindrical or only slightly compressed; head $2\frac{4}{5}$ to $2\frac{7}{8}$, from snout tip 4 to $4\frac{2}{5}$, width $2\frac{1}{2}$ to 3, from mandible tip $4\frac{1}{8}$ to $5\frac{3}{5}$. Snout $2\frac{3}{5}$ to 3 in head from snout tip; eye $3\frac{1}{2}$ to $4\frac{1}{5}$, $1\frac{1}{4}$ to $1\frac{3}{5}$ in snout, 1 to $1\frac{1}{10}$ in interorbital, $1\frac{2}{5}$ to $1\frac{1}{2}$ in postocular; maxillary reaches $\frac{3}{4}$ to eye, length 3 to $3\frac{3}{5}$ in head from snout tip; mandible before snout tip 6 to $8\frac{1}{5}$ in total; interorbital $2\frac{7}{8}$ to $3\frac{3}{4}$, low, nearly level. Gill rakers 6 or 7 + 17 or 18, short, $\frac{1}{2}$ of gill filaments, which $2\frac{1}{5}$ in eye.

Scales 44 to 52 in axial lateral row to caudal base and 4 or 5 more on latter; 6 above, 47 to 50 predorsal of which 30 to 32 forward opposite gill opening. Dorsal, anal and caudal finely scaly. Scales with

interorbital low. 109

Scales 42 in median lateral series to caudal base and 2 more on latter; about 32 tubes in upper section of lateral line, and 1 in lower section to caudal base and 1 more on latter; 6 scales above lateral line, 17 below, about 25? predorsal forward opposite front eye edge, 6 rows on cheeks of which 1 row on preopercle flange. Fins all more or less scaleless.

D. III, 25, third spine 3 in total head length, twenty third ray 2; A. III, 14, I, third spine longest $4\frac{1}{4}$, thirteenth 2; caudal $1\frac{1}{8}$, rounded slightly behind, with upper and lower ray produced into a filament; least depth of caudal peduncle 2; pectoral $1\frac{1}{4}$; ventral $1\frac{3}{4}$.

Reddish olive, with chestnut brown band extending from end of upper jaw through middle of base of dorsal fin;

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4 or 5 short basal radiating marginal
striae; circuli 30 to 50 basally, not
extended apically.

D. II, 12^{I or II}, 13, I, first branched
ray $1\frac{4}{5}$ to $2\frac{1}{8}$ in head from snout
tip; A. III, 12, I or III, 13, I, first
branched ray 2 to $2\frac{3}{5}$; least depth
of caudal peduncle $3\frac{3}{5}$ to $4\frac{1}{8}$;
caudal $1\frac{1}{5}$; pectoral $1\frac{2}{5}$ to $1\frac{2}{3}$;
ventral $2\frac{1}{5}$ to $2\frac{1}{4}$, insertion of fin
midway between front nostril and
caudal base.

Back and upper surface of head
brown, each scale pocket dark
brown, showing through scales as
brown marginal crescent. On
predorsal 3 median, parallel, close
set dark lines. Beak dark neutral
gray to dusky. Iris silvery white.
Narrow silvery white axial band,

Pseudochromis perspicillatus Günther

Pseudochromis perspicillatus Günther, Proc.

Zool. Soc. London, 1862, p. 193, ^(not ~~1862~~) pl. 27, fig. C.

China. — Weber, Siboga Exped., vol. 57, Fische, p. 263 (Tual, Niedrig Key; Elat, High Key).

Amblyopus sagitta (not Günther) Günther,

op. cit., 1862, pl. 27, fig. A.

Pseudochromis ransonneti Steindachner,

^{Ber.} Sitzb. Akad. Wiss. Wien, vol. 60, pt. 1, 1870, p. 562. Singapore.

Pseudochromis (Pseudochromis) ransonneti

Bleeker, Verh. Kon. Akad. Wet. Amsterdam, ^{no. 5,}

vol. 15, 1875, p. 19 (copied).

Pseudochromis rex Sale, Philippine Journ. Sci., vol. 4, no. 6, 1909, p. 529. (Mitsinilai Island, Solo Archipelago).

Depth 3; head 3 1/4. Snout 4 in head from snout tip; eye 4, long as snout, greater than interorbital; maxillary reaches 2/5 in eye, expansion 1 1/2 in eye, length 2 2/3 in head from snout tip; lower jaw with 2 and upper with 3 pairs of canine teeth;

427

much less than pupil depth and bordered above, especially posteriorly by blue gray still narrower band or line. Fins pale to whitish, dorsal and caudal darker to dusky terminally.

India, Ceylon, Malaya, East Indies, Philippines, China, Micronesia, New South Wales?

third spine $2\frac{1}{3}$, longest ray $1\frac{1}{2}$; caudal 1, rounded; least depth of caudal peduncle $1\frac{4}{5}$; pectoral $1\frac{1}{8}$; ventral reaches anal.

Bright orange, most scales below lateral line except on thorax with bright blue dot. Two blue lines cross eye ball but not out on orbit. Head uniform orange, very slightly darker above. Fins uniform orange. (Seale.)

Known from the type 90 mm. long and numerous paratypes.

428

9121 to 9129. Catbalogan, Samar.
April 15, 1908. Length 138 to 190 mm.

22319. Cebu. March 13, 1909.
Length 167 mm.

15 examples. Jolo, Jolo Island.
February 7, 1908. Length 60 to 90 mm.

20427. Malampaya River, Palawan.
December 26, 1908. Length 38 to 185
mm. 3 examples.

2 examples. Manila Bay, Luzon.
December 6, 1907. Length 108 to 124 mm.

5 examples. Manila Bay. December 8,
1907. Length 95 to 103 mm.

1 example. Manila Bay. December 9,
1907. Length 100 mm.

6 examples. Manila market. March 16,
1908. Length 65 to 186 mm.

20648. Manila market. June 13, 1908. Length 123 mm. ⁴²⁹

6394. Mantaguin Bay, Palawan, April 1, 1909. Length 65 to 110 mm. 2 examples.

22175. Port Bais, Negros. March 31, 1908. Length 124 mm.

19457, 19460, 19461, 19511. Ragay Bay, Ragay, Luzon. March 10, 1909. Length 155 to 197 mm.

2 examples. San Roque. July 28, 1908. Length 88? to 95 mm.

17554. Sorsogon market. March 12, 1909. Length 158 mm.

20554. Tilig, Lubang Island. June 14, 1908. Length 88 mm.

430

8 examples. Sandakan anchorage.
March 1, 1908. Length 160 to 200 mm.

24394. Sandakan Bay, Borneo.
March 2, 1908. Length 81 to 140 mm.
6 examples.

5288 to 5306. Sandakan Bay.
March 21, 1908. Length 129 to 218 mm.
23 examples.

A. N. S. P., nos. 48843 to 48852.

Philippines. Commercial Museum of Philadelphia. Length 95 to 120 mm.

As Dermatogenys viviparus.

A. N. S. P., nos. 48946 to 48962.

Philippines. Commercial Museum of Philadelphia. Length 125 to 135 mm.

621

Vinculum sexfasciatus (Richardson).

Chaetodon sexfasciatus Richardson, Ann.

Mag. Nat. Hist. London, vol. 10, 1842, p. 26.

West Australia. — Günther, Cat. Fish. Brit.

Mus., vol. 2, 1860, p. 35 (type). — Klunzinger,

Sitzb. Akad. Wiss. Wien, band 60, abt. 1, 1879,

p. 360 (King George Sound).

Vinculum sexfasciatum McCulloch, Biol.

Res. Endeavour, vol. 2, pt. 2, 1914, p. 110, plate

22 (Doubtful Island Bay, ^{West Australia}). — McCulloch,

Australian Zool., vol. 2, pt. 3, 1922, p. 91, plate

27 (New South Wales). — Abel, Arch. Naturg.,

band 89, abth. A, heft 5, 1923, p. 21 (South

West Australia).

Chaetodon ocellipinnis Macleay, Proc. Linn. Soc.

New South Wales, vol. 3, 1878, p. 33, plate 3, fig. 1.

King George's Sound.

Vinculum ocellipinnis McCulloch, Biol. Res. Endeavour,

vol. 4, pt. 4, 1916, p. 193 (note on type).

Hyporhamphus melanurus (Valenciennes)

Hemiramphus melanurus Valenciennes,
Hist. Nat. Poiss., vol. 19, p. 42, 1846
(type locality: Celebes). — Bleeker,

Naturk. Tijds. Ned. Indië, vol. 2, p. 472,
1851 (Rio); vol. 3, p. 747, 1852 (Celebes);
Verh. Batavia. Genoot. (Snoek. Vissch.),
vol. 24, p. 19, 1852 (Batavia); naturk.

Tijds. Ned. Indië, vol. 11, p. 419, 1856
(Muntok, Banka); vol. 13, p. 385, 1857
(Batjan); vol. 20, p. 238⁴⁵⁰, 1859-60 (Singapore).

— Kner, Reise Novara, Fische, p. 324, 1865
(Madras). — Steindachner, Sitzs. Ber.

Abad. Wiss. Wien, math. nat. Kl., vol. 60,
pt. 1, p. 571, 1870 (Singapore). — Jordan

and Richardson, Mem. Carnegie Mus., vol. 4,
p. 176, 1909 (Takao, Formosa). — Weber,
Siboga Exped., vol. 57, Fische, p. 130, 1913
(Mehado, Celebes; Liring, Salibabu).

Hemirhamphus melanurus Bleeker,
Nederl. Tijds. Dierk., vol. 3, p. 156, 1866
(Java, Singapore, Bintang, Banka,
Celebes, Batjan). — Günther, Cat.

Fish. Brit. Mus., vol. 6, p. 264, 1866
(Hong Kong). — Bleeker, Atlas Ichth.

Ind. Néerl., vol. 6, p. 58, pl. () 253,
fig. 6, 1866-72 (localities above); Verslag.
Akad. Wet. Amsterdam, ser. 2, vol. 2, p.
294, 1868 (Rio, Bintang). — Károli,

Termesz. Füzetek, Budapest, vol. 5, p. 182,
1881 (Singapore). — Elera, Cat. Fauna

Filip., vol. 1, p. 75, 1895 (Luzon, Cavite, Santa
Cruz). — Weber and Beaufort, Fishes

Indo-Austral. Archip., vol. 4, p. 151, 1922
(Atjeh, Sumatra; Batavia and Semarang,
Java; Menado, Celebes; Salibabu).

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Hemirhamphus guntheri Bleeker, Atlas
Ichth. Ind. Néerl., vol. 6, p. 59, 1866-
72 (on Günther 1866).

Hyporhamphus guntheri Fowler, Hong
Kong Naturalist, vol. 3, nos. 3-4, p. 267,
Dec. 1932 (compiled).

Depth $9\frac{3}{4}$ to 10, body little compressed, robust, sides flattened; head $2\frac{9}{10}$ to $3\frac{1}{10}$, head from snout tip $4\frac{3}{4}$ to 5, width $2\frac{4}{5}$ in its length, $4\frac{4}{5}$ to $5\frac{1}{5}$ in its length from mandible tip. Snout $2\frac{4}{5}$ to 3 in head from snout tip; eye $3\frac{2}{3}$ to $4\frac{1}{5}$, $1\frac{1}{3}$ to $1\frac{2}{5}$ in snout, greater to subequal with interorbital, $1\frac{3}{5}$ to $1\frac{2}{3}$ in postocular; maxillary reaches $\frac{3}{4}$ to eye, length $3\frac{2}{3}$ to $3\frac{3}{4}$ in head from snout tip; interorbital $4\frac{1}{4}$ to $4\frac{1}{3}$, level. Gill rakers 6 + 19, slender, $\frac{1}{2}$ of gill filaments, which $1\frac{3}{4}$ in eye.

Scales 53 or 54 in median axial row to caudal base and 4 or 5 more on latter; 6 above lateral line; 42 or 43 predorsal to front of snout, of which 32 or 33 forward to gill

band very dark and slender anteriorly, gradually becoming lighter and broader posteriorly. (Günther.)

~~One~~ Günther described several in the British Museum, the largest 90 mm. Steindachner does not give the dimensions for Pseudochromis ransonneti,^{and} though its second anal spine is said to be longer than the third, there is nothing to clearly establish as a distinct species from Günther's fish. There is nothing in the description of Pseudochromis rex to maintain it as a distinct species. In life it is said to be dark bluish on upper front portion of head and body with jet black line equal to width of pupil from snout tip through eye to below front third of soft dorsal, some dusky dots below posterior half of this line. General body color yellow,

opening. Few scales along front of dorsal and anal. Scales with 2 short close set marginal basal striae; circuli 17 to 21 fine parallel basal striae, not extended apically.

D. II, 13 or II, 14, first branched ray 2 to $2\frac{1}{10}$ in head from snout tip; A. II, 14 or II, 15, first branched ray $2\frac{1}{4}$ to $2\frac{3}{5}$; least depth of caudal peduncle 4 to $4\frac{1}{10}$, well compressed; pectoral $1\frac{2}{5}$ to $1\frac{2}{3}$; ventral $2\frac{2}{5}$, origin midway between front nostril and caudal base; caudal $1\frac{4}{5}$ to $1\frac{7}{8}$ in total head length.

Light brown on back and upper surfaces. Down middle of back before dorsal 3 parallel, close set, dark lines. Lower surfaces of body white, with silvery tints. Bright silvery white axial lateral band,

Pseudochromis aureus Seale

Pseudochromis aurea Seale, Philippine Journ. Sci., vol. 4, no. 6, 1909, p. 528. Titankai Island, Jolo Archipelago.

Depth 3; head $3 \frac{2}{5}$. Snout $3 \frac{3}{4}$ in head; eye 4; mouth moderate, lower jaw projecting; teeth in front of jaws in several series with 4 large, ^{curved} canines, teeth on sides of jaws in single series; teeth on vomer and palatines; maxillary reaches opposite pupil, length $2 \frac{1}{2}$ in head; interorbital 5; lower preopercle limb with 3 membranous points. Gill rakers 13 on lower limb, rather flat and wide.

Scales 41, transversely 14; smooth on entire body, their borders finely denticulated; 4 rows on cheek.

D. III, 26, spines rather weak, 13 of head, largest ray $1 \frac{1}{3}$; A. III, 14, base equals head,

narrower than eye and most distinct posteriorly, also bordered above by dark leaden line. Iris silvery white. Beak blackish. Fins dull brown, lower ones lighter and dorsal and caudal tips contrasted blackish.

Malaya, East Indies, China, Formosa. The two examples listed below differ a little from Bleeker's colored figure, as he shows both the dorsal and anal fin membranes entirely scaly. Bleeker's figure also shows far more scales in a lateral axial series, or 65 counted from gill opening and 60 counted in the lateral line. His description says "squamis lateribus 50 circiter in series longitudinali". He then takes into consideration Günther's Chinese

to caudal base and 9 more on latter; upper section of lateral line with 36 tubular scales, lower section with 8 to caudal base; 2 scales above lateral line, 13 below; about 16? predorsal forward opposite middle of interorbital, 5 rows on cheeks with preopercle flange naked. Scales ctenoid, except cycloid on nuchal region and breast.

D. III, 26, third spine 5 in head, twenty first ray $1\frac{9}{10}$; A. III, 14, I, third spine $4\frac{1}{8}$, third ray $2\frac{1}{3}$; caudal $1\frac{1}{4}$, convex behind; least depth of caudal peduncle 2; pectoral $1\frac{1}{2}$; ventral $1\frac{1}{2}$.

Light yellowish brown, each scale on upper front part of sides with brownish spot, forming rows. Faint or pale stripe along middle of each

fish, supposed to differ in having
58 scales and baptizes it guntheri!
Weber and Beaufort also seem to
think guntheri valid and give the
lateral line 55 for melanurus.
The present species, as Bleeker
contends, is best known by its more
advanced ventral and black tipped
dorsal and caudal.

2 examples. Sandakan, Borneo.
March 1, 1908. Length 215 to 217 mm.

side. dorsal and anal dusky
between rays, especially basally.
Other fins hyaline. Length 60 mm.
(McCulloch.)

Hyporhamphus regularis (Günther) ⁴³⁹

Hemiramphus regularis Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 261, 1866
(type locality: Australia; Western
Australia). — Castelnau, Proc. Linn.

Soc. New South Wales, vol. 3, p. (355) 394,
1878 (Port Jackson). — Macleay, Proc.

Linn. Soc. New South Wales, vol. 5, pt. 2,
p. 181, 1881 (Port Jackson). — Stead,

Fishes of Australia, p. 64, 1907 (New
South Wales, Victoria); — Roughley,
Ed. Fishes New South Wales, p. 37, pl. 11, 1908. —

Fishes of Australia, p. 29 (not pl. 5),
1916 (Western Australia; not New South
Wales and Queensland). — McCulloch,

Fishes New South Wales, ed. 2, p. 31, 1927
(part).

Hyporhamphus regularis Ogilby,
Handbook of Sydney, p. 123, 1898. —
McCulloch, Mem. Austral. Mus., no. 5,
pt. 1, p. 102, June 29, 1929 (New South
Wales, Queensland, Western Australia).

Reporhamphus regularis Whitley, Austral.
Zoologist, vol. 6, pt. 4, p. 314, Feb. 13,
1931 (reference).

Head over 3. Triangular part of
upper jaw formed by premaxillaries
much broader than long; eye $1\frac{1}{2}$
in postorbital, rather less than
interorbital; beak measured before
snout tip 2 in rest of head; vertex
and interorbital space convex.

Scales 58 in lateral series. Dorsal
and anal scaleless.

D. 15; A. 17, little shorter though
opposite dorsal; caudal moderately

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forked, lobes nearly equal and
central rays much longer than
eye; pectoral rays 12; ventral
base nearly midway between front
eye edge and caudal base.

Sides with well defined silvery
band as wide as a scale. Length
230 mm. (Günther.)

Western Australia, Victoria,
New South Wales, Queensland.

Neochaetodon vittatus Castelnau, Proc. Zool.
 Soc. Victoria, vol. 2, 1873, p. 130. Victoria.
Castelnau, Proc. Linn. Soc. New South Wales,
 vol. 3, 1879, p. 375 (Port Jackson).

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Hyporhamphus sinensis (Günther)

Hemirhamphus sinensis Günther, Cat. Fishes Brit. Mus., vol. 6, p. 265, 1866 (type locality: China). — Bleeker,

Nederl. Tijds. Dierk., vol. 4, p. 149, 1873 (reference). — Elera, Cat. Fauna Filip., vol. 1, p. 575, 1895 (Luzon, Manila, Navotas).

Hyporhamphus sinensis Rutter, Proc. Acad. Nat. Sci. Philadelphia, 1897, p. 69 (Swatow). — Fowler and Bean, Proc. U. S. Nat. Mus., vol. 58, p. 314, 1920 (Soochow). — Nichols, Bull. Amer. Mus. Nat. Hist., New York, vol. 58, art. 1, p. 49, Oct. 15, 1928 (Jungting Lake, Hinan). — Fowler, Hong Kong Naturalist, vol. 3, nos. 3-4, p. 266, Dec. 1932 (Soochow material).

Depth $16\frac{1}{3}$, body robust,
 scarcely compressed, sides convex;
 head $2\frac{3}{4}$, head from snout tip
 $4\frac{3}{4}$, width $3\frac{3}{4}$ ~~width~~, width $8\frac{3}{4}$
 in head from mandible tip. Snout
 $2\frac{2}{5}$ in head from snout tip; eye
 $4\frac{1}{2}$, $1\frac{4}{5}$ in snout, ~~subequal~~ subequal
 with interorbital; maxillary reaches
 $\frac{5}{6}$ of snout, length $1\frac{1}{6}$ in head
 from snout tip; interorbital $4\frac{1}{2}$,
 low, level. Gill rakers $8+20$,
 lanceolate, $\frac{3}{4}$ of gill filaments,
 latter $1\frac{2}{5}$ in eye.

Scales (pockets) $48?$ in axial

series from gill opening and caudal base; 8 scales above lateral line to dorsal origin; 37 predorsal to occiput. ~~Dorsal~~ Dorsal and anal scaleless. Scales with 3 or 4 basal radiating striae; coarse cyculi 14.

D. II, 14, first branched ray ~~4 1/2~~ 3 in head from snout tip; A. II, 16, first branched ray 2 5/6; caudal 1 1/2, little emarginate behind and lower lobe slightly longer; least depth of caudal peduncle 7 3/4, compressed; pectoral 1 1/2; ventral 2 1/2.

Pale clay color generally, more or less uniform. Sides of head, especially opercle, iris and broad longitudinal band nearly equal to eye in width, extends from shoulder to caudal base medially, bright silvery white. Beak pale brown, Iris uniform pale brown.

Inserted midway between gill opening and caudal base.

China. Reported from the
Philippines by Elera.

U. S. N. M., No. 83995. Soochow, China.
H. Gist Gee. Length 155 mm.

~~83995~~

Hyporhamphus sindensis (Regan)

Hemirhamphus sindensis Regan, Journ. Nat. Hist. Soc. Bombay, vol. 16, no. 2, p. 318, 1905 (type locality: Karachi).

Depth $9\frac{1}{2}$, $1\frac{2}{5}$ in body width; head $2\frac{3}{5}$. Snout long as broad; eye $1\frac{1}{3}$ in postorbital, nearly equals interorbital; beak before snout little longer than rest of head.

Scales 50 to 55 in longitudinal series, deciduous. Dorsal and anal scaly.

D. 14; A. 15, begins nearly opposite dorsal; caudal forked; pectoral equals space from hind opercle edge to front pupil edge; ventral origin midway between front opercle edge and caudal base.

Silvery white stripe on side, broader posteriorly. Length 188 mm. to caudal base. (Regan.)

Karachi.

Hyporhamphus xanthopterus (Valenciennes)

Hemiramphus xanthopterus Valenciennes,
Hist. nat. Poiss., vol. 19, p. 47, 1846
(type locality: Fresh waters of Alipey).
— Day, Fishes of India, pt. 3, p. 574,
~~1877~~ Pl. 119, fig. 2, 1877; Fauna British
India, Fishes, vol. 1, p. 425, 1889. —

Weber and Beaufort, Fishes Indo
 Austral. Archip., vol. 4, p. 162, 1922
(Kner's materials).

Hemiramphus xanthopterus Day,
Fishes of Malabar, p. 168, 1865; Proc.
Zool. Soc. London, 1865, p. 309 (Cochin,
Malabar). — Steindachner, Denks.
Akad. Wiss. Wien, math.-nat. Kl.,
vol. 71, pt. 1, p. 155, 1907 (Scheich
& Thuman).

Hemiramphus erythrorhynchus (not
Le Sueur) Kner, Reise Novara, Fische,
p. 324, 1865 (Ceylon).

Depth $9\frac{2}{3}$; head $2\frac{7}{8}$. Snout $2\frac{4}{5}$ in head from snout tip, longer than wide at base; eye 4, $1\frac{1}{2}$ in snout, 1 to $1\frac{1}{3}$ in interorbital; teeth in many rows, tricuspidate; mandible before snout tip $1\frac{1}{3}$ in rest of head; interorbital very low.

Scales 56 to 58 in median lateral series; 7 above. Dorsal and anal scaleless except few small scales on anterior portion.

D. II, 13, first branched ray $2\frac{1}{5}$ in head from snout tip; A. II, 14, first branched ray $2\frac{1}{5}$; caudal $1\frac{1}{8}$, forked, upper lobe $1\frac{1}{4}$ in lower; Pectoral I, 12, fin $1\frac{3}{5}$ in head from snout tip; ventral I, 5, fin $2\frac{4}{5}$, origin midway between hind eye edge and caudal base.

Brilliant lateral band, $\frac{2}{3}$ wide as scale in its widest part. End of beaks coral red. (Day.)

Arabia, India, Ceylon. Valenciennes gives the length as 150 mm.

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Hyporhamphus ardelio (Whitley)

Reporhamphus ardelio Whitley, Austral. Zoologist, vol. 6, pt. 4, p. 314, Feb. 13, 1931 (on Stead).

Hemirhamphus regularis (not Günther)
Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, p. 394, 1879 (type locality: Port Jackson). — Macleay, Proc. Linn.

Soc. New South Wales, vol. 6, p. 245, 1881 (Port Jackson). — Woods, Fisher. New South Wales, p. 84, pl. 37, lower fig., pl. 38, 1883. — Ogilby, Edible Fish. New South Wales, p. 174, pl. 43, 1893.

— Stead, Edible Fish. New South Wales, p. 37, pl. 11, 1908 (fish markets New South Wales). — Roughly, Fishes of

Australia, p. 29, pl. 5, 1916 (New South Wales; South Queensland; part). — McCulloch, Fishes of New South Wales, ed. 2, p. 31, 1927.

Depth $9\frac{3}{4}$; head $3\frac{1}{8}$. Snout 3 in head from snout tip; eye $3\frac{7}{8}$, $1\frac{1}{5}$ in snout; maxillary reaches about $\frac{2}{3}$? to eye, length $3\frac{2}{5}$ in head from snout tip; interorbital very low.

Scales moderately large (not given).

Dorsal (rays not given) fin height $4\frac{1}{2}$ in total head length; anal like dorsal, opposite, fin height $4\frac{1}{5}$; caudal 2, moderately forked, broad lobes pointed, upper $1\frac{1}{8}$ in lower; least depth of caudal peduncle $1\frac{1}{5}$ times eye; pectoral $2\frac{3}{4}$ in total head length; ventral $4\frac{7}{8}$, origin midway between front of eye and caudal base.

Back pale green. Upper surface of head darker, with golden reflections.

in lower section to caudal base also followed by 1 or 2 more on latter; 3 scales above lateral line, 12 to 14 below, 18 to 26 predorsal forward till above nostril, 4 rows on cheek to preopercle ridge and preopercle flange naked. Scales with 15 basal radiating striae; apical denticles 80; circuli very fine.

D. III, 27, I or 26, I, third spine $2\frac{2}{5}$ to $3\frac{2}{3}$ in total head length, twenty third ray $1\frac{4}{5}$ to 2; A. III, 14, I, vary 16, I, third spine $2\frac{7}{8}$ to 3, fourth ray $1\frac{4}{5}$ to $2\frac{1}{5}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, rounded, convex behind; least depth of caudal peduncle 2 to $2\frac{1}{4}$; pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral $1\frac{1}{10}$ to $1\frac{1}{8}$.

Brown, each scale usually with slightly paler median shade. Lower surface of head and abdomen often

Three narrow black vertebral streaks, not extending so far back as dorsal. Two similar but irregular and broader streaks between these and broad silvery lateral band, which bordered above by narrow orange streak. Faint black spot at pectoral base. Length 330 mm. (Stead.)

New South Wales, in coastal lakes, harbors and estuaries, sometimes also to fresh water.

Depth $2\frac{7}{8}$ to $3\frac{1}{8}$; head $2\frac{3}{4}$ to $3\frac{1}{8}$, width $2\frac{1}{8}$ to $2\frac{2}{5}$. Snout $4\frac{1}{5}$ to $4\frac{1}{3}$, in head from snout tip; eye $3\frac{1}{5}$ to 4, greater than snout in young to subequal with age, greater than interorbital; maxillary reaches $\frac{1}{5}$ to $\frac{1}{4}$ in eye, expansion $1\frac{4}{5}$ to $2\frac{2}{3}$ in eye, length $2\frac{3}{4}$ to $2\frac{4}{5}$ in head from snout tip; teeth small, conic, in narrow bands in jaws, with 4 large canines in front of each jaw, above median pair much smaller and close together, below median well separated; interorbital $4\frac{4}{5}$ to 5, little convex. Gill rakers 5+12, lanceolate, little less than gill filaments or $2\frac{3}{4}$ in eye.

Scales 37 or 38 in ~~lateral line~~ ^{median lateral series} to caudal base and 7 or 8 more on latter; tubular scales 24 to 34 in upper surface section of lateral line and 8 to 10 more

Hyporhamphus quoyi (Valenciennes)

Hemiramphus quoyi Valenciennes, Hist. Nat. Poiss., vol. 19, p. , 1846 (type locality: Port Dorey, New Guinea). —

Bleeker, Natuurk. Tijds. Ned. Indië, vol. 2, p. (472) 491, 1851 (Rio; Batavia); vol. 3, pp. 54, 59 (Singapore), p. 249 (New Guinea), p. 546 (Amboina), p. 717 (Banka), p. 718 (Koba); Verh. Batavia.

Genoot. (Snoek. Dissch.), vol. 24, p. 26, 1852 (Batavia; Rio); Natuurk. Tijds. Ned. Indië, vol. 6, p. 518, 1854 (Blakaw, west Sumatra); vol. 7, p. 314, 1854 (Bantem); vol. 8, p. 437, 1855 (Bonthaian, Celebes);

vol. 10, p. 348, 1856 (Rio, Bintang); vol. 12, p. 217, 1856 (Nias); Act. Soc. Sci. Ind. Néerl., no. 9, vol. 3, p. 4, 1857-58 (Trussan, Sumatra), p. 6 (Siboga); no. 2, vol. 6, p. 5, 1859 (Port Dorey); (Sumatra 9), vol. 8, p. 2, 1860 (Benculen); Natuurk. Tijds. Ned. Indië, vol. 22, p. 65, 1860 (Benculen).

— Kner, Reise Novara, Fische, p. 323, 1865 (Singapore). — Alleyne and Macleay, Proc. Linn. Soc. New South Wales, vol. 1, p. 350, 1876 (Hall Sound, New Guinea).

— Martens, Preuss. Exped. Ost Asien, vol. 1, pp. 325, 406, 1876 (Manila). — Weber, Zool. Ergebn. Reise Ned. Ost Ind., vol. 3, p. 456, 1894 (Singapore, Borneo, Banka, Sumatra, Nias, Java, Celebes, Amboina).

— Jordan and Seale, Bull. Bur. Fisher., vol. 26, p. 8, 1906 (1907) (Cavite). — Evermann and Seale, Bull. Bur. Fisher., vol. 26, p. 58, 1906 (1907) (Bacon).

Weber, Siboga Exped., vol. 57, Fische, p. 129, 1913 (Labuan, Ling, Lombok and Buka-Bai, Rotti). — Fowler, Proc. Acad. Nat.

Sci. Philadelphia, 1919, p. 8 (Philippines); Copeia, no. 58, p. 62, June 18, 1918 (Philippines); Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 262 (Vigan, Orani, Philippines); Mem.

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Bishop Mus., vol. 10, p. 77, 1928 (New Guinea). — Whitley, Records Austral. Mus., vol. 16, no. 4, p. 214, March 28, 1928 (Port Darwin, Gulf of Carpentaria, Queensland). — McCulloch, Austral.

Mus. New., no. 5, pt. 1, p. 102, June 29, 1929 (Queensland, North Australia, New Guinea).

Hemirhamphus quoyi Bleeker, Natuurk. Tijds. Ned. Indië, vol. 3, p. 54, 1852 (Singapore).

Hemirhamphus quoyi Bleeker, Nederl. Tijds. Dierk., vol. 3, p. 153, 1866 (Java, Sumatra, Nias, Singapore, Bintang, Banka, Borneo, Celebes, Amboina, New Guinea). — Günther,

Cat. Fish. Brit. Mus., vol. 6, p. 267, 1866 (East Indies). — Bleeker, Atlas Ichth. Ind. Néerl., vol. 6, p. 323, pl. () 323, fig. 1, 1866-72 (above localities); Versl. Akad. Wet. Amsterdam, ser. 2, vol. 2,

p. 294, 1868 (Rio, Bintang); ser. 2, vol 7, p. 36, 1873 (Arw). — Günther, Rep.

Voy. Challenger, vol. 1, pt. 6, p. 50, 1880 (Somerset, Queensland). — Károli,

Termesz. Füzetek, Budapest, vol. 5, p. 182, 1881 (Singapore, Matang). —

Macleay, Proc. Linn. Soc. New South Wales, vol. 5, pt. 2, p. 183, 1881 (South New Guinea); Van Elera, Cat. Fauna

vol. 7, p. 593, 1882 (New Guinea). —

Hasugbu). — Volz, Naturh. Tijds. Ned. Indië, vol. 46, p. 178, 1907 (Miboga, Belakaw, Padang, Trussan, Benbulen).

↑ — Weber, Nova Guinea, vol. 5, pt. 2, p. 229, 1908 (Etna Bay, south west New Guinea); — Beaufort, Bijdr. Dierk. Amsterdam, pt. 19, p. 104, 1913 (Beo, Waigiu)

and Whitley, Mem. Queensland Mus., vol. 8, no. 25, p. 138, 1925 ().

p. 294, 1868 (Rio, Bintang); ser. 2, vol. 7, p. 36, 1873 (Aru). — Günther, Rep.

Voy. Challenger, vol. 1, pt. 6, p. 50, 1880 (Somerset, Queensland). — Károli,

Termesz. Füzetek, Budapest, vol. 5, p. 182, 1881 (Singapore, Matang). —

Macleay, Proc. Linn. Soc. New South Wales, vol. 5, pt. 2, p. 183, 1881 (South New Guinea); van Elera, Cat. Fauna

Filip., vol. 1, p. 575, 1895 (Luzon, Batangas, Masugbu). — Volz, naturh. Tijds. Ned. Indië, vol. 46, p. 178, 1907 (Siboga, Delabau, Padang, Trussan, Benbulen).

— Weber and Beaufort, Fishes Indo-Austral. Archip., vol. 4, p. 154, 1922 (Java, Madura, Lombok, Flores, Rotti, Celebes, Buton, Ambon, Halmahera, Waigiu, New Guinea). — McCulloch and Whitley, Mem. Queensland Mus., vol. 8, no. 25, p. 138, 1925 (

Macleay

Fishes
Indo-Austral
Archip.
vol. 4, p. 154, 1922

vertical ones often narrower dist

Malaya,
Siam, etc
New Guinea

Philippines, etc
Java, etc
Sulu, etc
Malayan,

dorsal often with deep J-ray dots
several J-ray ones terminable on pin
vesicular larvae black subbasal often
male only extending over 1/2 to 4 mm

— Webe
unilateral
Java,
Sulu,
and
etc.

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— Paradice and Whitley, Mem. Queensland
Mus., vol. 9, no. 1, p. 80, pl. 11, fig. 2,
1927.

Belone quoyi Klunzinger, Sitzs. Ber.
Akad. Wiss. Wien, Math. nat. Kl.,
vol. 80, pt. 1, p. 415, 1879 (Port Darwin;
Endeavour River).

Hyporhamphus quoyi Evermann and Seale,
Proc. U. S. Nat. Mus., vol. 31, p. 506,
1906 (Manila).

Depth $9\frac{2}{5}$ to 10, body robust and cylindrical; head from mandible tip $2\frac{3}{4}$ to $2\frac{7}{8}$, from snout tip $4\frac{1}{5}$ to $4\frac{3}{4}$, width $2\frac{1}{2}$ to $2\frac{3}{5}$. Snout $2\frac{2}{3}$ to $2\frac{4}{5}$ in head; eye $3\frac{3}{5}$ to $3\frac{4}{5}$, $1\frac{1}{5}$ to $1\frac{2}{5}$ in snout, $1\frac{1}{8}$ to $1\frac{1}{4}$ in interorbital, $1\frac{1}{5}$ to $1\frac{1}{2}$ in postocular; maxillary reaches $\frac{3}{5}$ to $\frac{3}{4}$ to eye, length $3\frac{2}{5}$ to 4 in head from snout tip; mandible before snout tip $6\frac{1}{4}$ to 7 in total length; interorbital $3\frac{1}{2}$ to $3\frac{2}{3}$, nearly level or with slight median depression. Gill rakers 11 + 23, lanceolate, $1\frac{1}{8}$ in gill filaments, which $2\frac{1}{4}$ in eye.

Scales 50 to 57 in axial lateral series to caudal base and 5 or 6 more on latter; 7 above; 44 or 45 predorsal, of which 30 or 31 forward to occiput. Dorsal and anal largely covered with

Pseudochromis quinque dentatus (McCulloch)

Pseudochromis quinque dentatus McCulloch,
Biol. Res. Endeavour, vol. 5, pt. 4, June 8,
1926, p. 190, pl. 50. Off Cape Capricorn,
Queensland, in 12 fathoms; north west
of Pine Peak, Queensland, in 25 fathoms.

Depth $3\frac{2}{5}$; head $3\frac{1}{8}$. Snout $4\frac{1}{5}$ in
head; eye $3\frac{2}{3}$, greater than snout or
interorbital; maxillary reaches midway
in eye, expansion $2\frac{1}{4}$ ^{in eye}, length $2\frac{4}{5}$
in head; band of minute upper teeth
narrowing laterally in jaws, outer
row little enlarged, several pairs of
upper front canines in each jaw besides
lower canine each side medially; angular
patch of minute teeth on vomer and some
on front portion of each palatine; ^{upper opercular edge with 4 or 5 flat teeth.} Gill
rakers 10 on lower branch of first arch.

Scales 47 in median lateral series

fine, crowded, close set, small scales. Scales with 1 to 3 basal radiating striae; circuli as parallel vertical striae, 32 to 61 basal, 93 to 125 terminal.

$\underline{D. \text{II}}$, 13 or $\underline{\text{II}}$, 14, first branched ray $2 \frac{3}{4}$ in head from snout tip; $\underline{A. \text{II}}$, 12 or $\underline{\text{II}}$, 13, first branched ray $3 \frac{1}{4}$ to $3 \frac{1}{2}$; caudal $1 \frac{1}{8}$ to $1 \frac{1}{5}$, well forked, lower lobe much longer; least depth of caudal peduncle $4 \frac{1}{3}$ to $4 \frac{2}{5}$; pectoral $1 \frac{2}{3}$ to $1 \frac{3}{4}$; ventral $2 \frac{4}{5}$ to 3, inserted nearer caudal base than gill opening, reach $1 \frac{4}{5}$ to vent.

Back and upper surface of head brown, sides and lower surfaces silvery white. Scales caducous, each one on back with dark or dusky

pocket, forming blackish network.
Median dark line down back.
Bright silvery white lateral axial
band, dividing color of back and
lower surfaces. Iris silvery white.
Fins all pale brownish, Pectoral
ones paler or more whitish.

Malaya, East Indies, Philippines,
North Australia, Queensland.

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5 examples. Abuyog. July 26, 1909.
Length 190 to 225 mm.

21093, 21094. Itulayan Bay.
June 17, 1909. Length 50 to 188 mm.
4 examples.

6779 to 6781. Bolinao Bay.
May 10, 1909. Length 114 to 155 mm.

5680. Busin Harbor, Burias Island.
April 23, 1908. Length 210 mm.

22972 to 22978, 22980 to 22982.
Cannahala Bay, Ragay Gulf, Luzon.
March 11, 1909. Length 255 to 300 mm.

16708. Capunuyfugan, Mindanao.
May 9, 1908. Length 94 to 202 mm.
17 examples.

1 example. Cataingan Bay.
April 18, 1908. Length 53 mm.

9088, 9089, 20453, 20454. Catbalogan anchorage, Samar. April 15, 1908. Length 100 to 248 mm. 11 examples.

5960, ~~5961~~ [738]. ~~5962~~ Cavite market. December 1, 1908. Length 213 mm.

18371. Cavite. May 14, 1909. Length 215 mm.

5351. Cebu. April 4, 1908. Length 310 mm.

6 examples. Cuyo Island. April 9, 1909. Length 38? to 67 mm.

19889 to 19891. Daisy Island, west of Bumbun. January 6, 1910. Length 214 to 235 mm.

9167 to 9170. Gigoro Point, Dinapundan Bay, Samar. July 28, 1909. Length 176 to 234 mm. 14 examples.

11805. Guijulan, Negros. April 2, 1908. Length 47? to 191 mm. 3 examples.

462

1 example. Guinijuan Island. June 4,
1909. Length 90? mm.

20599, 20600. Lenggayau Gulf. May 11,
1909. Length 132 to 170 mm.

5 examples. Luzon shore San Vicente
Harbor. November 13, 1908. Length 135 to
193 mm.

Linacapan Island.

9 examples. Malcochin Harbor,
December 18, 1908. Length 63 to 228 mm.

2 examples. Malcochin Harbor.
December 1908. Length 217 to 225 mm.

17930. Manila market. June 13, 1908
Length 232 mm, without beak.

1 example. Mansalay, Mindoro. June 3,
1908. Length 47 mm.

11776,

6132, 10776, 20860. Mansalay. June 4,
1908. Length 65 to 278 mm. 6 examples.

463
6389 to 6393. Mantaguin Bay,
Palawan. April 1, 1909. Length 90? to
2.75 mm. 6 examples.

6207. Mantaguin Bay. April 2, 1909.
Length 212 mm.

6 examples. Mati, Pujada Bay,
Mindinao. May 13, 1908. Length 76 to
166 mm.

~~5791.~~ ^{5791.} ~~Mati.~~ Mati. May 15, 1908.
Length 119 to ²²⁸ ~~119~~ mm. 8 examples.

5575. Masbate Bay, Masbate.
April 20, 1908. Length 186? mm.

13885. Matnog Bay. May 31, 1909.
Length 64 to 183 mm. 14 examples.

14080. Mompog Island, Anabayan
Islands. March 3, 1909. Length 120 mm.

1 example. Kato River. June 17, 1909.
Length 72 mm.

464
1 example. Hogas Point, Panay.
February 4, 1908. Length 76 mm.

17 examples. North end of Endeavour
Strait, north west coast of Palawan.
December 22, 1908. Length 174 to 223 mm.

13132. Palloc, Mindanao. May 22,
1908. Length 200 mm.

1 example. Taluan Bay, Mindoro.
December 11, 1908. Length 92 mm.

19736, 19737, 19738. Panabutan, Mindanao.
February 5, 1908. Length 108 to 138 mm.

1 example. Panabutan Bay. February
6, 1908. Length 82 mm.

22243 to 22247. Pandanon Island.
March 23, 1909. Length 205 to 222 mm.

18 examples. Pangawon River, Port
Caltow, Busuanga Island. December 16,
1908. Length 85 to 244 mm.

465

21 examples. Parang, Parang, Mindanao.
May 23, 1908. Length 172? to 237 mm.

1 example. Philippines. Length 118 mm.

3 examples. Port Cattom, Busuanga
Island. December 15, 1908. Length 70? to
94 mm.

18711.
~~18711~~ Port Dupon, Leyte. March
17, 1909. Length 40 to 169 mm. 2 examples.

17177. Port Natalvi, Malapascua
Island. November 23, 1908. Length 196 mm.

19626. Port Palapag. June 3, 1909.
Length 129 mm.

14611. Port Palapag. June 14, 1909.
Length 163 mm.

13 examples. Port San Pio Quinto,
Camiguin Island. November 10, 1908.
Length 152 to 194 mm.

6572, 6573. Port San Vicente.
November 18, 1908. Length 48 to 334
mm. 10 examples.

4 examples. Port Lison, west of
Pinar Island. December 17, 1908.
Length 196 to 218 mm.

18743 to 18745. Pratas Reef. October
25, 1908. Length 181 to 240 mm.
18 examples.

2 examples. Ragay Bay, Ragay Gulf,
Luzon. March 10, 1909. Length 43 to
46 mm.

6296. Romblon Harbor. March 25,
1908. Length 205 mm.

21307, 21308. Romblon. March 26, 1908.
Length 118 to 148 mm.

12262. San Juanico Light, Samar.
April 13, 1908. Length 218 mm.

467

1 example. San Miguel Harbor,
Ticao Island. April 2, 1908. Length
105 mm.

20237. San Miguel Harbor. April
21, 1908. Length 85 to 185 mm. 2 examples.

6318. San Roque market. June 27,
1908. Length 254 mm.

5694, 19670. Santa Cruz Island,
Marinduque. April 24, 1908. Length
163 to 305 mm.

1 example. Santa Maria, Siquijor
Island. August 11, 1909. Length 30?
mm.

2 examples. Santiago River, Pagapas
Bay, Luzon. February 20, 1909. Length
178 to 186 mm.

20613. Sirinao Island, Laboda Bay,
near Alfonso XIII. December 30, 1908.
Length 204 mm.

17313. Sipadan Island. September 28, 1909. Length 200 mm.

19430. Sorogon market. March 12, 1909. Length 145 mm.

4 examples. Subig Bay, Alangapo market. January 7, 1908. Length 178 to 197 mm.

8387, 8388. Surigao, Mindanao. May 8, 1908. Length 39 to 235 mm. 4 examples.

1 example. Tataan Pass ~~Pass~~, Sulu Archipelago. February 20, 1908. Length 44 mm.

D. 5561. Tomabal Island (NW.), S. 36° W., 0.2 mile (lat. 5° 50' 45" N., long. 121° 01' 15" E.), Jolo Island and vicinity. September 18, 1909. Length 37 to 98 mm. 37 examples.

469
1 example. Tilig, Lubang, July 14,
1908. Length 50? mm.

7811 ~~7812 7813 7814 7815 7816~~ to 7817, 7846.
Ulugan Bay near Baheli River
mouth, Palawan. December 28, 1908.
Length 113 to 222 mm. 9 examples.

5135. Usada Island, near Jolo.
March 5, 1908. Length 302 mm.

9152, 19096. Varadero Bay, Luzon.
July 23, 1908. Length 58? to 200 mm.
3 examples.

2 examples. Varadero Bay. July 25,
1908. Length 53 to 70? mm.

2 examples. Varadero Harbor. July
22, 1908. Length 77 to 182 mm.

17204. Verde del Sur, Palawan.
April 6, 1909. Length 150? mm.

7 examples. Great Tobea Island.
December 15, 1909. Length 163 to 210
mm.

D. 5669. Mamuju Island (E.), S.
14° E., 18.5 miles (lat. 2° 19' 30" S., 118°
50' E.), Macassar Strait, Celebes.
December & 29, 1909. Length 36 mm.

1 example. Sandakan, Borneo.
February 29, 1908. Length 68? mm.

22641. Talissi Island. November
9, 1909. Length 125 mm.

18265, 18266. Tomahu Island.
December 11, 1909. Length 212 to 219 mm.

A. N. S. P., nos. 47570 to 47574.
Philippine Islands. Commercial
Museum of Philadelphia. Length
198 to 253? mm.

A. N. S. P., one example. Orani,
Bataan Province, Luzon. April 28,
1923. Rev. Joseph Clemens. Purchased.
Length 247 mm.

489

Chaetodon auriga Forstäl.

- Chaetodon auriga Forstäl, Descript. Animal., 1775, pp. XII, Co. Djedda and Lohaja, Red Sea.
— Gmelin, Syst. Nat. Linn., 1789, p. 1266 (Arabia).
— Walbaum, Cited. Pisc., vol. 3, 1792, p. 422 (copied). — Schneider, Syst. Ichth. Bloch, 1801, p. 226 (Arabia). — Lacépède, Hist. Nat. Poiss., vol. 4, 1802, pp. 457, 484 (Arabia). — Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. ⁷⁹66 (Massawa).
— Rüppell, Neue Wirbelth. Fisch., 1839, p. 28 (Red Sea). — Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 7 (Red Sea). — Kaup, Arch. Naturg., abth. 1, 1860, p. 156 (Africa, Moluccas).
— Klunzinger, Verh. zool. bot. Ges. Wien, band 20, 1870, p. 776 (Koseir, Red Sea). — Peters, Monatsh. Akad. Wiss. Berlin, 1876, p. 437 (Hawitins). — Day, Fishes of India, pt. 3, 1877, p. 106. — Day, Fann. British India, vol. 2, 1889, p. 5. — Evermann and

472

Hyporhamphus balinensis (Bleeker)

Hemiramphus balinensis Bleeker, Nat.
Tijds. Ned. Indië, vol. 16, p. 266, 1858
(type locality: Bali); vol. 17, p. (143)
170, 1858-59 (Boeling, Bali). —

Günther, Cat. Fish. Brit. Mus., vol. 6,
p. 261, 1866 (type). — Bleeker, Atlas

Ichth. Ind. Néerl., vol. 6, p. 58, pl. ()
252, fig. 4, 1866-72 (Bali). — Waite,

Mem. Austral. Mus., no. 3, p. 195, 1897
(Funafuti, Ellice Islands). — Weber and

Beaufort, Fishes Indo Austral. Archip.,
vol. 4, p. 152, 1922 (Sumba, Flores,
Kajoa, between Gebe and Fau, Ceram,
Binongka, Tiur).

Hemiramphus balinensis Weber, Siboga
Expéd., vol. 57, Fische, p. 130, 1913
(Kajoa Island between Gebe and Fau,
Kawa, Binongka, Tiur). — Weber
and Beaufort, Fishes Indo Austral.

Archip., vol. 4, p. 152, 1922 (Sumba;
Flores; Kajoa; also Weber's material).

— Fowler, Mem. Bishop Mus., vol. 10, p.
76, 1928 (compiled); vol. 11, no. 5, p.
319, 1931 (compiled).

Hemirhamphus intermedius (not Cantor)

Bleeker, Ned. Tijds. Dierk., vol. 3,
p. 154, 1866 (Bali; not synonymy).

— Schmeltz, Cat. Mus. Godeffroy, no.
4, p. 25, 1869 (Samoa); no. 7, p. 57,
1879 (Samoa). — Pöhl, Cat. Mus.
Godeffroy, no. 9, p. 38, 1884 (Samoa).

Hemirhamphus balinensis var.

occidentalis Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4,
p. 152, 1922 (type locality: Pulu Babi,
west coast of Sumatra).

Depth $10\frac{2}{3}$ to 18, body rather robust,
compressed, sides flattened; head
 $2\frac{1}{2}$ to $2\frac{2}{3}$, head from snout tip $4\frac{1}{4}$
to $4\frac{3}{4}$, width 3 to $3\frac{2}{5}$, width $5\frac{3}{4}$
to $9\frac{1}{4}$ in head from mandible tip.

Snout $2\frac{2}{3}$ to $2\frac{4}{5}$ in head from snout tip; eye $4\frac{1}{3}$ to $4\frac{3}{5}$, $1\frac{1}{2}$ to $1\frac{4}{5}$ in snout, $1\frac{1}{2}$ to $1\frac{4}{5}$ in postocular, $1\frac{1}{5}$ to $1\frac{1}{4}$ in interorbital or little greater than bony interorbital; maxillary $\frac{3}{5}$ to $\frac{2}{3}$ to eye, length $3\frac{2}{3}$ to $3\frac{3}{4}$ in head from snout tip; mandible before snout tip $4\frac{1}{8}$ to $4\frac{2}{3}$ in total head length; bony interorbital 4 to $4\frac{3}{4}$, level, with wide median shallow concavity. Gill rakers 8+25, slender, $1\frac{2}{3}$ in gill filaments which $1\frac{4}{5}$ in eye.

Scales 51 to 53 in lateral axial series to caudal base and 4 or 5 more on latter; 7 above; 50 to 54 predorsal, of which 34 or 35 forward to gill opening. Dorsal and anal finely scaled. Scales with 25 to 63 parallel vertical striae, incomplete

Pseudochromis adustus Müller and
Troschel, Horae Ichth., pt. 3, 1849, p. 23,
 pl. 4, fig. 3. Philippines. — Günther, Cat.
Fishes Brit. Mus., vol. 2, 1860, p. 258 (copied);
Cruise of Curacao, Brenchley, 1873, p. 407
 (Solomon Islands).

Pseudochromis (Pseudochromis) adustus
Bleeker, Verh. Kon. Akad. Amsterdam,
 no. 5, vol. 15, 1875, p. 18 (copied).

Anar nebulosum de Vis, Proc. Linn. Soc.
New South Wales, vol. 9, 1885, p. 875. Murray
 Island.

Pseudochromis nebulosus McCulloch, Mem.
Queensland Mus., vol. 2, January 25, 1915,
 p. 49, pl. 16, fig. 2 (paratype; Duke of York
 Island, New Britain).

Pseudochromis wildii Ogilby, Annals
Queensland Mus., no. 9, pt. 1, 1908, p. 34.
 Moreton Bay, Queensland.

over median vertical axis.

D. II, 13 to II, 15, first branched ray 3 to 3 1/4 in head from snout tip; A. II, 15 or II, 16, first branched ray 3 1/10 to 3 1/2; least depth of caudal peduncle 5 7/8 to 6; pectoral 2 1/10 to 2 1/5; ventral 3 1/2 to 3 3/4, origin about midway between gill opening and caudal base.

Beak and upper surfaces brown, scale pockets darker and show through each scale as submarginal dark crescentic blotch. Predorsal part of back with 3 close and dark parallel lines. Sides and under surfaces of body white, with silvery reflections. Silvery white axial band on side, not quite wide as eye depth and bounded its whole course above with dark

Beaufort, Bijdragen Dierk. Amsterdam, pt. 19, 1913, no. 9, p. 119 (Amboina). —

Regan, Proc. Zool. Soc. London, 1914, pt. 3, p. 650 (). — Whitley, Records

Australian Mus., vol. 16, no. 1, October 7, 1927, p. 13 (Michaelmas Cay, North Queensland). —

Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 189 (Shortland Island).

Pseudochromis (Pseudochromis) fuscus Bleeker,

Verh. Kon. Akad. Wet. Amsterdam, ^{no. 5,} vol. 15,

1875, p. 16 (Batu, Bawean, Celebes, Sangi,

Flores, Holor, Timor, Ternate, Buru,

Ceram, Amboina, Banda, Goram, Waigiu).

— McCulloch, Biol. Res. Endeavour, vol.

5, pt. 4, June 8, 1926, p. 186 (types of

P. wardii and Anar nebulosum; New-

Britain and Solomon Islands).

gray narrow band. Beak dusky to blackish. Iris silvery white. Dorsal and caudal grayish, other fins pale to whitish.

East Indies, ^{Philippines,} Polynesia. Known chiefly by its long preorbital, which long as eye. The scales are very caducous, all of my specimens nearly entirely denuded.

Pseudochromis fuscus Müller and Troschel

Pseudochromis fuscus Müller and Troschel,
 Horae Ichth., pt. 3, 1849, p. 23, pl. 4, fig. 2.
 Celebes. — Günther, Cat. Fishes Brit. Mus.,
 vol. 2, 1860, p. 257 (copied). — Bleeker, Verh.
 Kon. Akad. Wet. Amsterdam, vol. 15, 1875,
 pl. 1, fig. 5. — Günther, Journ. Mus. Godeffroy,
 vol. 5, pt. 11, 1876, p. 159 (Solomons, Pelew
 Islands, Yap). — Bleeker, Atlas Ichth.
 Ind. Néerl., vol. 9, 1876-77, pl. (5) 388,
 fig. 4. — Day, Fauna British India, vol. 2,
 1889, p. 227, fig. 82. — Steindachner,
 Abhandl. Senckenberg. Gesell., vol. 25, 1900,
 p. 427 (Ternate). — (Regan) Bedot, Rev.
 Suisse Zool., vol. 17, 1909, p. 169 (Amboina).
 — Weber, Siboga Exped., (Fische, vol. 57,) 1913,
 p. 262 (Sumba; Kabala dua, Borneo Banks;
 Kaniungan ketgil Island; Lirung, Salibabu;
 Salomakie Island; Saleyer; Pual, Kei;
 Elat, High Key; Roma Island). —

14 examples. Camp Overton, Mindanao.
August 5, 1909. Length 136 to 213 mm.

9 examples. Jolo, Jolo Island.
February 8, 1908. Length 40 to 87 mm.

16138. Mahinog anchorage,
Camiguin Island. August 3, 1909.
Length 190 mm.

10 examples. Rogas Point, Panay.
February 1908. Length 163 to 218 mm.

6 examples. Sablayan Bay, Mindoro.
December 12, 1908. Length 87 to 119 mm.

17314. Sipadan Island. September
28, 1909. Length 188 mm.

22579.
22578, Tataan Pass. February 20, 1908.
Length 156 to 165 mm.

20868. Turmindao Island anchorage.
February 25, 1908. Length 215 mm.

1 example. Varadero Bay.
July 22, 1908. Length 78 mm.

22 examples. Limbe Strait, Celebes.
November 9, 1909. Length 60 to 101 mm.

1 example. Sandakan anchorage,
Borneo. March 1, 1908. Length 100 mm.

479

Hyporhamphus pacificus (Steindachner)

Hemirhamphus pacificus Steindachner,
Denks. Akad. Wiss. Wien, Math. nat. Kl.,
vol. 70, p. 511, 1901 (type locality: Laysan
Island). — Seale, Ocean. Pap. Bishop

Mus., vol. 1, no. 5, p. 15, 1902 (Hilo). —
Günther, Journ. Mus. Godeffroy, vol. 8,
pt. 16, p. 356, 1909 (Hawaiian Islands).

Hemiramphus pacificus Jordan and Seale,
Bull. Bur. Fisher., vol. 25, p. 207, 1905
(1906) (Pago Pago). — Fowler, Mem. Bishop
Mus., vol. 10, p. 75, 1928 (Honolulu,
Laysan, Waikiki, Samoa); Proc. U. S.
Nat. Mus., vol. 80, art. 6, p. 6, 1932
(Nukuhiva, Marquesas).

? — Snyder, Proc. U. S. Nat. Mus., vol. 42,
p. 494, 1912 (Okinawa, Riu Kiu).

Hyporhamphus pacificus Snyder, Bull. U. S. Fish Comm., vol. 22, p. 522, 1902 (1903) (Laysan Island). — Jordan

and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, p. 126, fig. 41, 1903 (1905) (Kailua). — Fowler, Proc. Acad. Nat.

Sci. Philadelphia, 1919, p. 6 (Hawaiian Islands). — Fowler and Silvester,

Marine Pap. Carnegie Inst., p. 114, 1922 (Pago Pago; Hawaii). — Fowler, Copeia,

no. 122, p. 82, Nov. 20, 1922 (Hawaii).

Hyporhamphus pacificus Borodin, Bull. Vanderbilt Marine Mus., vol. 1, art. 2, p. 46, 1930 (Mindinao; error).

Hemiramphus affinis (not Günther) Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 207, 1905 (1906) (Apia specimen).

Depth 12 to 12 1/2, body robust, but slightly compressed; sides little flattened; head 2 2/3 to 2 3/4, head from snout tip 4 1/2 to 4 3/5, width 3 1/4 to 3 1/3. Snout 2 3/5 to 2 2/3 in head from snout tip; eye 3 1/3 to 4 1/5, 1 1/2 to 1 3/5 in snout, subequal or slightly greater than interorbital; reaches 3/5 of eye, length 3 1/2 to 3 4/5 in head from snout tip; interorbital 4 3/4 to 4 4/5, level. Gill rakers 10 + 23 or 24, lanceolate, 1 1/2 in gill filaments, which 1 3/4 in eye.

Scales 65 to 67 in medial axial count from gill opening to caudal base and 5 or 6 more on latter; 7 above, 2 below, 39 or 40 predorsal forward to occiput. Dorsal and anal largely covered with small scales, also caudal base. Scales

758 to 761. San Miguel Harbor, Ticao Island. April 21, 1908. Length 122 to 128 mm.

485. Talissi Island. November 9, 1909. Length 121 mm.

379. Tara Island. December 14, 1908. Length 130 mm.

1160 [162]. Tataan, Simaluc Island. February 19, 1908. Length 130 mm. Center of each scale bright sulphur yellow with dusky overshades, margins with dark yellowish olive forming like mosaic. Large blackish blotch below spinous dorsal nearly obliterates yellow, inner area nearly large as head. Vagular band black, not wide as eye above, increasing in width across cheek and subopercle. Forehead pearl gray. Opercle edge bright chrome. Snout with cadmium shades above. Iris

with fine vertical striae, basal 19 or 20, variously or not complete in vertical axis of scale.

D. III, 14, first branched ray $5\frac{3}{5}$? to $5\frac{3}{4}$ in total head length; A. III, 15 or III, 16, first branched ray $6\frac{1}{2}$? to 7; caudal (damaged) forked, lower lobe longer, $2\frac{3}{5}$?; least depth of caudal peduncle $12\frac{1}{4}$; pectoral $4\frac{2}{3}$ to $4\frac{3}{5}$; ventral $6\frac{1}{3}$ to $6\frac{1}{2}$, inserted midway between gill opening and caudal base.

Back amber or brown, sides paler, apparently whitish in life.

Fallen scales of back expose dark pockets, made up of blackish dots.

From upper part of pectoral axil narrow silvery white band, widest between dorsal and anal where width $\frac{1}{2}$ vertical eye diameter, and along upper edge narrow leaden

1076. Masbate Reef, Masbate Island.
April 20, 1908. Length 120 mm.

823, 3598. Mompog Island, Amabayer
Island. March 3, 1909. Length 127 to 138 mm.

391, 392. near Palag Bay, Luzon Island.
June 16, 1909. Length 115 to 121 mm.

362, 363, 1265 to 1268. Pagapas Bay.
February 20, 1909. Length 90 to 137 mm.

17660. Pandamon Island. March 23, 1909.
Length 42 mm.

3878. Pandamon Island. March 24, 1909.
Length 55 mm.

10391. Port Jamelo, Luzon. July 13, 1908.
Length 142 mm.

968. Port Maricaban. July 21, 1908.
Length 140 mm.

984. Port Matalvi. November 23, 1908.
Length 120 mm.

933. Pujada Bay. May 15, 1908. Length
100 mm.

bordering line. Iris bright ⁴⁸³
silvery white. Fins pale brown,
dorsal and caudal terminally and
upper pectoral edge grayish.

Philippines, Polynesia, Hawaii.

A. N. S. P., nos. 28121 to 28124.
Hawaiian Islands. U. S. Fish Comm.
Length 127 to 138 mm.

A. N. S. P., no. 31032. Apia,
Samoa. Bureau of Fisheries.
Length 180 mm, beak and caudal
broken. As Hemiramphus affinis.

A. N. S. P., no. 51527. Pago Pago,
Samoa. Capt. C. F. Silvester. Length
205 mm.

4618. Grande Island reef, Subig Bay.
January 8, 1908. Length 137 mm.

1153. Hermana Mayor. March 8, 1909.
Length 138 mm.

1061, 1062. Ligo Point. January 1, 1908.
Length 136 to 140 mm.

4696, 4699, ^{7992.} Little Santa Cruz Island.
May 26, 1908. Length 92 to 142 mm.

1114, 4886. Little Santa Cruz Island.
May 28, 1908. Length 133 to 145 mm.

672. Maitara Island. November 26, 1909.
Length 140 mm.

1008, 4703, 4706, 4707. Mansalay, Mindoro.
June 4, 1908. Length 110 to 130 mm.

528. Mansalay. June 9, 1908. Length 130 mm.

3631. Maribojoc Bay, Bohol Island.
March 26, 1909. Length 105 mm.

1015. Maricaban Island. January 20, 1908.
Length 138 mm.

484

Hyporhamphus acutus (Günther)

Hemirhamphus acutus Günther, Proc.
Zool. Soc. London, 1871, p. 671 (type
Locality: Raratonga, Cook Islands);
Journ. Mus. Godeffroy, vol. 8, pt. 16,
p. 356, 1909 (type).

Hemiramphus acutus Fowler, Mem.
Bishop. Mus., vol. 10, p. 75, 1928
(copied).

Head over 3 to caudal base. Beak
before snout tip little over 2 in head;
triangular upper jaw rather longer
than broad; eye $1\frac{2}{3}$ in postorbital,
little less than interorbital; vertex
and interorbital flat. Scales 53;
dorsal and anal scaleless. D. 13; A.
17, begins little before dorsal, but
fins nearly subequal in length; caudal
forked, lower lobe longer, central rays
longer than eye; ventral base midway
between caudal base and gill opening.
Sides with well defined silvery stripe.
Length 152 mm. (Günther.)
Polynesia.

455

Hyporhamphus sayori (Schlegel)

Hemiramphus sayori Schlegel, Fauna Japonica, Poiss., pts. 10 to 14, p. 246, pl. 110, fig. 2, 1846 (type locality: Interior of Nagasaki Bay).

Hemiramphus sayori Bleeker, Verh. Batavia. Genoots. (hal. Japan), vol. 26, pp. 5, 116, 1857 (Nagasaki); Act. Soc. Sci. Ind. Néerl., No. 3, vol. 3, p. 3 (Kioesio), p. 6 (Japan), 1857-58. — Martens, Preuss. Exped. Ost Asien, vol. 1, pp. 126, 401, 1876 (Yeddo, Yokohama, Nagasaki). — Jordan

and Starks, Proc. U. S. Nat. Mus., vol. 31, p. 516, 1906 (Port Arthur). — Evermann

and Shaw, Proc. Calif. Acad. Sci., vol. 16, no. 4, p. 112, 1927 (Chefoo). — Tchang,

Contrib. Biol. Lab. Sci. Soc. China, vol. 4, no. 4, p. 32, fig. 37, 1928 (Nanking).

456

Hemiramphus sajorii Bleeker, Verhand.
Batavia. Genoot. (Japan), vol. 25,
p. 18, 1853 (Sajori).

Hemiramphus sajori Günther, Cat. Fish.
Brit. Mus., vol. 6, p. 265, 1866 (copied);
Rep. Voy. Challenger, vol. 1, pt. 6, p. 70,
1880 (Yokohama). — Károli, Termesz.

Füzetek, Budapest, vol. 5, p. 182, 1881
(Kobe, Yokohama). — Steindachner,

Denks. Akad. Wiss. Wien, math.-nat. Kl.,
vol. 49, pt. 1, p. 294, 1885 (Tokyo). —

Ishikawa, and Matsuura, Prelim. Cat. Fish.
Mus. Tokyo, p. 18, 1897 (reference). —

Sowerby, Natural. in Manchuria, vol. 4,
p. 162, 1930 (Pei tai Ho, South Manchuria;
Kiangsu Province in Yang-tze Delta).

487

Hyporhamphus sajori Jordan and Snyder,
Annot. Zool. Japon., vol. 3, p. 60, 1901
(reference). — Jordan and Starks,

Proc. U. S. Nat. Mus., vol. 26, p. 533, 1903
(Nagasaki, Matsushima, Aomori, Same,
Tokyo, Misaki, Wakanoura, Kobe,
Hakata); vol. 28, p. 203, 1905 (Gusan
and Fusan). — Franz, Abhandl. Akad.

Wiss. München, Suppl., vol. 4, pt. 1, p. 24,
1911 (Yokohama; Aburatsubo). — Jordan

and Metz, Mem. Carnegie Mus., vol. 6,
p. 25, 1913 (Fusan and Chinnampo). —

Fowler, Proc. Acad. Nat. Sci. Philadelphia,
1919, p. 7 (Hakodate and Kushiro). —

Izuka and Matsuura, Cat. Zool. Spec. Mus.
Tokyo, Vertebr., p. 166, 1920 (Kasumigaura).

— Maori, Hand List Manchurian Vertebr.,
p. 176, 1927 (compiled). — Schmidt and
Lindberg, Bull. Acad. Sci. U. S. S. S., p. 1138,

1930 (Iwuyga, Japan). — Schmidt,
Trans. Pac. Comm. Acad. Sci. U.S.S.
R., p. 35, 1931 (Nagasaki, Fusan,
Kagoshima). — Anonymous, Ill. Jap.

Aquat. Rev., pt. 1, pl. 21, fig. 4, 1931. —
Yanaka, Journ. Faculty Sci. Univ.
Tokyo, vol. 3, pt. 1, p. 50, Nov. 4, 1931
(reference). — Fowler, Hong Kong Naturalist, vol.
3, nos. 3-4, p. 267, fig. 12, Dec. 1932 (Japan).

Belone microstoma Basilevsky, Nov. Mem.
Soc. Nat. Moscow, vol. 10, p. 260, 1855
(type locality: Mari prov. Shantung).

Zenarchopterus microstoma Bleeker,
Nederl. Tijds. Dierk., vol. 4, p. 149,
1873 (reference; error).

Zenarchopterus microstoma Chu, Biol.
Bull. St. John's Univ., Shanghai, Zo. 1,
p. 87, Jan. 1931 (reference).

Hemiramphus occipitalis Gill, Proc.
Acad. Nat. Sci. Philadelphia, 1859, p.
148 (type locality: Shimoda, Idsu).

489

Hyporhamphus occipitalis Jordan and
Snyder, Annot. Zool. Japon., vol. 3, p.
60, 1901 (reference).

Hyporhamphus kurumeus Jordan and
Starks, Proc. U. S. Nat. Mus., vol. 26,
p. 534, fig. 1, 1903 (type locality:
Chikugo River, Kurume, Japan). —
Fowler, Proc. Acad. Nat. Sci.
Philadelphia, 1919, p. 7 (Chikugo
River at Kurume).

Hemiramphus mioprorus Jordan and
Dickerson, Proc. U. S. Nat. Mus., vol. 34,
p. 111, 1908 (type locality: Nagasaki,
Japan^{fig.}).

490

Depth 11 to 13, thick or robust, sides slightly compressed; head $2\frac{2}{3}$ to $3\frac{1}{4}$, head from snout tip $4\frac{3}{5}$ to $4\frac{7}{8}$, width $3\frac{1}{6}$ to $3\frac{1}{5}$. Snout $2\frac{1}{2}$ in head from snout tip; eye $4\frac{1}{3}$ to $4\frac{4}{5}$, 2 to $2\frac{1}{8}$ in snout, 1 to $1\frac{1}{8}$ in interorbital; maxillary reaches $\frac{3}{4}$ to $\frac{4}{5}$ to eye, length $2\frac{7}{8}$ to $3\frac{1}{6}$ in head from snout tip; interorbital $4\frac{3}{4}$ to $5\frac{1}{8}$, low, slightly convex. Gill rakers 10 + 24, lanceolate, $1\frac{1}{8}$ in gill filaments, which $2\frac{1}{2}$ in eye.

Scales 90 to 105 in lateral axial series from above gill opening to middle of caudal base and 8 or 9 more on latter; 14 scales above lateral line, 3 below, 70 predorsal scales to occiput which opposite hind or vertical edge of

Pectoral dull or olive-brown. Ventrals blackish. Iris brown.

East Indies, Philippines, Melanesia, New Zealand, Polynesia.

preopercle, or about 95 forward to front of snout. Small scales on dorsal and anal basally and anteriorly, also caudal base scaly. Scales with 5 or 6 radiating basal striae; circuli fine, more or less complete, less so apically.

D. II, 13 to II, 16, first branched ray $4\frac{1}{2}$ to $4\frac{4}{5}$ in total head length; A. II, 14 to II, 16, first branched ray $4\frac{3}{5}$ to 5; caudal $2\frac{2}{3}$ to $2\frac{3}{4}$, little emarginate behind with lower lobe slightly longer; least depth of caudal peduncle 10 to $11\frac{1}{2}$; pectoral $1\frac{4}{5}$ to $1\frac{7}{8}$; ventral 5 to $5\frac{1}{5}$, origin midway between gill opening and caudal base.

Brown on back, sides and below paler, with silvery white

630

D. X to XII, 21, I to 24, I, fourth spine $1\frac{2}{3}$ to $3\frac{1}{4}$ in combined head and body, fourth ray $1\frac{1}{4}$ to $1\frac{1}{3}$ in head; A. III, 17, V or 18, I, last spine $1\frac{2}{5}$ to 2, fourth ray $1\frac{1}{10}$ to $1\frac{1}{5}$; least depth of caudal peduncle $2\frac{7}{8}$ to $3\frac{1}{8}$; caudal $1\frac{1}{6}$ to $1\frac{1}{3}$, hind edge little emarginate, to slightly convex when expanded; pectoral 2 to $2\frac{1}{2}$ in combined head and body; ventral $2\frac{2}{5}$ to $2\frac{4}{5}$.

Body largely blackish brown, especially medially. Rather diffuse pale or whitish band from front of spinous dorsal to opercle and breast. Another, more sharply defined, broadly from last dorsal spines down obliquely across caudal peduncle. Outer portion of soft dorsal dull brownish and caudal paler. Spinous dorsal and anal more or less blackish, except pale band on former.

shades. narrow silvery lateral axial streak from above gill opening to caudal base medially, widens below dorsal until little broader than pupil though much less than eye diameter. Dark bordering neutral gray line all along lateral band. Iris and side of head bright silvery white. Beaks brown, usually dark. Dorsal and caudal brownish, other fins paler to whitish.

China, Korea, Japan.

629

Depth $1\frac{1}{4}$ to $1\frac{1}{3}$; head $2\frac{3}{4}$ to $2\frac{4}{5}$,
width $1\frac{7}{8}$ to $2\frac{1}{8}$. Snout $2\frac{2}{5}$ to 3 in
head; eye $2\frac{3}{4}$ to $3\frac{1}{3}$, little greater to $1\frac{2}{5}$
in snout, little greater than interorbital ^{in young}
to equal with age; maxillary $4\frac{1}{8}$ to
 $4\frac{4}{5}$ in head, extends $\frac{1}{2}$ to $\frac{2}{3}$ in snout;
interorbital $3\frac{1}{5}$ to 4, broadly convex;
with age strong horny or antler-like
spine above each eye, variously curved,
bifid and about long as eye, fre-
quently asymmetrical; occiput with
horny, conic point, more developed
and directed forward with age.
Gill rakers 3+15, short points to of gill filaments, which $1\frac{3}{4}$ in eye.
Tubes 40 to 45 in lateral line
to caudal base; 10 or 11 scales above
lateral line, 26 or 27 below. Scales
with 8 to 10 basal radiating striae;
apical denticles 58 to 91, with 5 to 7
transverse series of basal elements;
circuli fine.

A. N. S. P., nos. 79486 to 79499.
Chikugo River, Kurume, Japan.
D. S. Jordan and J. O. Snyder.
Stanford University. Length 125 to
170 mm.

A. N. S. P., nos. 29647 to 29653.
Hakodate, Hokkaido, Japan.
D. S. Jordan and J. O. Snyder.
Stanford University. Length 90? to
120 mm.

A. N. S. P., nos. 31732 to 31734.
Kushiro, Japan. D. S. Jordan and
J. O. Snyder. Stanford University.
Length 237 to 248 mm.

abth. A, heft 5, 1923, p. 24 (Mykol. New
Guinea, Talassia, New-Fommerrania,
Tilenius Harbor, Rulim).

Hemiochus varius Fowler, Copeia, no. 58,
June 18, 1918, p. 64 (Philippines).

Hemiochus (Taurichthys) varius Steindachner,
Abhandl. Senckenberg. Gesell., band 25, 1900,
p. 420 (Ternate).

Taurichthys viridis Cuvier, Hist. Nat. Poiss.,
vol. 7, 1831, p. 114, Ambonia.

Taurichthys bleekeri Castelnau, Res. Fish.
Austral. (Victoria Rec. Phila. Exhib.),
1875, p. —. Cape York, Queensland.

Hemiochus pleurotaenia Cuhl, l.c., plate
1, fig. 5, Tudang, Sumatra.

494

Genus Hemiramphus Cuvier

Hemi-Ramphus Cuvier, Règne Animal, vol. 2, p. 186, 1817. (Type Esox brasiliensis Linnaeus, designated by Gill, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 273.)

Hemirhamphus Voigt, Das Thierreich, Cuvier, vol. 2, p. 383, 1832. (Type Esox brasiliensis, Linnaeus.)

Rhynchoramphus Fowler, Mem. Bishop Mus., vol. 10, p. 75, 1928. (Type Hemiramphus georgii Valenciennes, orthotypic.)

Farkians Whitley, Australian Zoologist, vol. 6, p. 250, August 1930. (Type Hemiramphus commersonii Cuvier, orthotypic.)

↑ Reporhamphus Whitley, Austral. Zoologist, vol. 6, pt. 4, p. 314, Feb. 13, 1931. (Type Hemirhamphus australis Steindachner, orthotypic.)

494

Genus Hemiramphus Cuvier

Hemi-Ramphus Cuvier, Règne Animal, vol. 2, p. 186, 1817. (Type Eox brasiliensis Linnaeus, designated by Gill, Proc. Acad. Nat. Sci. Philadelphia, 1863, p. 273.)

Hemirhamphus Voigt, Das Thierreich, Cuvier, vol. 2, p. 383, 1832. (Type Eox brasiliensis, Linnaeus.)

Rhynchorhamphus Fowler, Mem. Bishop Mus., vol. 10, p. 75, 1928. (Type Hemiramphus georgii Valenciennes, orthotypic.)

Farhians Whitley, Australian Zoologist, vol. 6, p. 250, August 1930. (Type Hemiramphus commersonii Cuvier, orthotypic.)

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31) Ardeapiscis Whitley, Australian Zoologist, vol. 6, pt. 4, p. 314, Feb. 13, 1931. (Type Hemiramphus welsbyi Ogilby, orthotypic.)

~~Phoxinus~~
~~macrurus~~
~~part 6, pt~~
~~Ando...~~

Journ. Mus. Godeffroy, band 2-3⁵ 5-6, 1874,
p. 35, plate 32, fig. 13 (South Sea). — Day,
Fishes of India, pt. 1, 1875, p. 104, plate 26, fig.
3 (British Museum example). — Macleay,
Proc. Linn. Soc. New South Wales, vol. 5, 1881,

Phoxinus

Body rather robust, moderately long, sides compressed or somewhat flattened. Upper jaw very short, lower produced into long slender beak, bordered with membrane. Beak short in young, longer with age. Premaxillaries form triangular plate with teeth fitting against toothed portion of mandible. Teeth feeble, mostly tricuspid. Air bladder cellular, sometimes with many partitions. Scales moderate. Dorsal longer than anal, little advanced and last ray more or less extended. Anal not modified in males. Pectoral short. Ventral small, placed well postmedian or much nearer caudal base than gill opening.

Species numerous.

496

Hemiramphus lucens Valenciennes

Hemiramphus lucens Valenciennes,
Hist. nat. Poiss., vol. 19, p. 62, 1846
(type locality: Moluccas). — Bleeker,

Natuurk. Tijds. Ned. Indië, vol. 3, pp.
231, 249, 1852 (Moluccas).

Hemiramphus lucens Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4,
p. 162, 1922 (note).

This species is undescribed and
merely placed here for completeness.

Hemiramphus breviceps Castelnau

Hemiramphus breviceps Castelnau,
Proc. Linn. Soc. New South Wales,
vol. 2, p. 240, 1878 (type locality:
Brisbane River mouth).

Hemiramphus argenteus (not Bennett)
Macleay, Proc. Linn. Soc. New South
Wales, vol. 6, pt. 2, p. 246, 1882 (reference).

— McCulloch, Amer. Mus. Mem., no. 5,
pt. 1, p. 103, June 29, 1929 (compiled).

Depth $6\frac{2}{3}$ in body without caudal;
head $3\frac{1}{3}$. Eye less than interorbital;
beak equals space between snout
tip and hind eye edge; beak before
snout 12 in fish without caudal;
beak ["back"] short, straight, pointed
at extremity.

Scales 48 in lateral line.

D. 15, inserted rather behind anal;
A. 15; caudal forked, lower lobe
rather longer; pectoral rather longer

than lower jaw, rather more than half total length of head, rays 12; ventral inserted nearer anal than end of opercle.

Back brown. Body with silvery lateral band, surmounted by blue black streaks. End of beaks red. Length 125 mm. (Castelnau.)

Queensland. An imperfectly known species.

499

Analysis of species

a. Upper jaw at least broad as long, usually little wider than long; lower jaw moderately extended.

b. Reporhamphus. Dorsal and anal origins opposite, or dorsal origin only slightly in advance.

c.¹ D. 12; A. 13; scales 65. cotnoq.

c.² D. 13 to 18.

d. Scales moderate, about 45 to 65.

e.¹ D. 13; A. 13; scales 46 to 50; lower gill rakers 18. erythrorhynchus.

e.² D. 14.

f.¹ A. 16.

f.² A. 18.

intermedius.

australis.

e.³ D. 15; A. 14 or 15.

g.¹ Dorsal and anal scaleless.

laticeps.

g.² Dorsal and anal finely scaled; scales 48 to 50; lower gill rakers 28.

affinis.

e.⁴ D. 16 to 18; A. 14 or 15. leucopterus.

d.² Scales very small, 81 or 82 in lateral series; lower gill rakers 21; A. 19 or 20. melanochir.

Linn. Soc. New South Wales, vol. 5, pt. 2, p. 181, 1881 (Port Jackson, Melbourne, Brisbane, Western Australia). —

McCoy, Prodr. Zool. Victoria, vol. 2, pl. 135, fig. 1, 18~~88~~⁹⁰. — Stead, Fishes

of Australia, p. 64, fig. 66, 1906 (New South Wales, Tasmania, Queensland, New Zealand).

Hemiramphus intermedius Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 7 (Victoria); 1923, p. 43 (Victoria material).

b.² Hemiramphus. Anal origin well behind dorsal origin, at least below base of fifth dorsal ray or posterior; upper jaw broader than long.

h.¹ Scales 46 to 65 in lateral series.

i.¹ Sides without black vertical blotches.

j.¹ D. 13; A. 12 or 13.

h.¹ Body strongly compressed. marginatus.

h.² Body robust. welsbyi.

j.² D. 14; A. 11 or 12.

l.¹ Scales 46. robustus.

l.² Scales 54 to 58. japonicus.

i.² Sides with 4 to 9 black vertical blotches; scales 50 to 52; D. 13 or 14; A. 11 or 12; lower gill rakers 22 to 24. far.

h.² Scales 63 to 66; D. 13 or 14; A. 12 or 13; lower rakers 20 to 30.

a.² Rhynchorhamphus. Upper jaw greatly longer than broad; lower jaw long. brasiliensis. georgii.

Hemirhamphus intermedius, ^(not Cantor) Macleay,
Proc. Linn. Soc. New South Wales, vol.
2, p. 245, 1881 (Port Jackson, Melbourne,
Bouffon, Western Australia). —

Johnston, Proc. Roy. Soc. Tasmania, pp.
91, 132, 1882. — Sherrin, Handbook
New Zealand Fishes, p. 33, —

Woods, Fisher. New South Wales, p. 84,
pl. 37 (upper fig.), 1883. — Ogilby,

Edible Fishes New South Wales, pl. 42, 1893.

— Roughley, Fishes of Australia, p. 27, pl.
4, 1916 (Tasmania, New Zealand, Lord
Howe Island).

Hemirhamphus intermedius McCoy, Prodr.
Zool. Victoria, vol. 2, dec. 14, pl. 135, fig.
1, 1889 (Victoria).

501

Hemiramphus cotnoy H. M. Smith

Hemiramphus cotnoy H. M. Smith,
Bull. U.S. Fish Comm., vol. 21, p. 170,
1901 (Oct. 4, 1902) (type locality:
Lake Buhi, Luzon).

Depth 8 in length from end of upper jaw to caudal base, sides compressed, vertical; head $2\frac{1}{3}$, from lower jaw tip, in total length of body. Eye large, $1\frac{4}{5}$ in postorbital space; premaxillaries broader than long, length less than eye; lower jaw beyond end of upper jaw rather greater than rest of head or $4\frac{2}{5}$ in body; interorbital $1\frac{1}{5}$ width of eye.

Scales 65 in lengthwise series; 9 between dorsal and anal.

D. 12, low, fin height not exceeding eye, origin slightly before anal; A. 13, very short, much higher than dorsal, first ray short, next 4 long

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and broad, middle rays shorter than last, free fin edge incised and nearly vertical; caudal rounded; pectoral length slightly exceeds body depth; ventral very short, much less than eye, much nearer caudal base than pectoral axil.

In formaline - greenish above, scales with dark edges. White below. Silvery lateral stripe increasing in width from before backward. Dorsal dusky, other fins plain. Lower jaw black.
Length 106 mm. (H. M. Smith.)

Luzon. According to Smith reported to reach a weight of $\frac{1}{2}$ to $\frac{2}{3}$ pounds.

503

Hemiramphus erythrorinchus Le Sueur

Hemiramphus erythrorinchus Le Sueur,
Journal Acad. Nat. Sci. Philadelphia,
vol. 2, pt. 1, p. 137, 1821 (type locality:
no locality; near Timor and Mauritius).

— Fowler, Bull. Bishop Mus., 22, p. 6,
1922 (Guam); Mem. Bishop Mus., vol.
10, p. 77, 1928 (Lifiang, Fiji, Samoa,
Melle, Savau, Namuku, Guam, Suva,
Caroline); vol. 11, no. 5, p. 319, 1931
(compiled).

Hemiramphus erythrorhynchus Bleeker,
Naturk. Tijds. Ned. Indië, vol. 3, p.
747, 1852 (Macassar).

Hemiramphus erythrorhynchus Valenciennes,
Hist. Nat. Poiss., vol. 19, p. 40, 1846
(Mauritius). — Guichenot, Notes Ile
Réunion, vol. 2, p. 29, 1862.

Hemiramphus erythrorhynchus Sauvage,
Hist. Nat. Madagascar, Poiss., p. 526,
1891 (name; error).

Hemiramphus erythrorhynchus Weber
and Beaufort, Fishes Indo Austral.
Archip., vol. 4, p. 162, 1922 (note).

? Esop gambarur Lacépède, Hist. nat.
Poiss., vol. 5, pp. 295, 313, pl. 7, fig. 2,
1803 (type locality: Sea of Arabia
[not Rio Janeiro, Brazil]).

Hemiramphus gamberur Rüppell,
Neue Wirbelth. Fische, p. 74, 1835
(Massana). — Klunzinger, Verh.
zool. bot. Ges. Wien, vol. 21, p. 585,
1871 (Red Sea).

Hemiramphus dussumieri Valenciennes,
Hist. nat. Poiss., vol. 19, p. 33, 1846 (type
locality: Seychelles). — Bleeker, Naturk.

Tijds. ned. Indië, vol. 1, p. 160, 1850
(Banka); Verh. Batavia. Genoot. (Noek.
Vissch.), vol. 24, 1852, p. 18 (Batavia),
p. 27 (Singapore); Naturk. Tijds. ned.
Indië, vol. 16, p. 408, 1858 (Japara, Java);
Act. Soc. Sci. Ind. neerl. (Acht. Sumatra),

vol. 8, 1859, p. 12 (Benculen), p. 55
 (Telokbetong, Benculen, Ulakan,
 Priaman); *Natuurk. Tijds. Ned. Indië*,
 vol. 20, p. 141, 1859-60 (Badjoa, Boni);
 vol. 21, p. 139, 1860 (Muntok, Banka);
 vol. 22, p. 108, 1860 (Muntok), p. 113
 (Buru); *Nederl. Tijds. Dierk.*, vol. 1, p.
 240 (Obi), p. 272 (Atapupu, Timor), 1863.

— Schmeltz, *Cat. Mus. Godeffroy*, no. 1, p.
 10, 1864 (South Sea); no. 2, p. 9, 1865
 (South Seas). — Kner, *Reise Novara*,

Fische, p. 322, 1865 (Madras, Nicobars).

— Bleeker, *Nederl. Tijds. Dierk.*, vol. 1,
 p. 176, 1865 (Siam; copied). — Günther,

Fishes of Zanzibar, p. 117, 1866 (Aden;
 Zanzibar; Seychelles). — Klunzinger,

Verh. zool. bot. Ges. Wien, vol. 21, p. 584,
 1871 (Red Sea). — Pohl, *Cat. Mus.*

Godeffroy, no. 9, p. 38, 1884 (South Seas).

— Fowler, *Proc. Acad. Nat. Sci.*

Philadelphia, 1925, p. 201 (Delagoa Bay).

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Hemiramphus dussumieri Bleeker,
Nat. Tijds. Ned. Indië, vol. 2, p. 210
(B-veldeksomba), 1851; vol. 3, p. 54
(Singapore), p. 445 (Banka), p. 747
(B-ilaomba, Celebes)¹⁸⁵²; vol. 6, p. 90
(Banda, heira), p. 204 (Timor, Kupang),
p. 518 (Delakan, west Sumatra), 1854;
vol. 8, p. 307 (Batoe), p. 446 (Kobos),
1855; vol. 11, p. 95 (Banda), p. 419
(Muntok, Banka), 1856; vol. 12, p. 193
(Ternate), p. 217 (Nias), 1856; Act.

Soc. Ind. Néerl., no. 5, vol. 1, p. 7 (Amboina),
1856; vol. 2, no. 7, p. 7 (Amboina), 1857;
Natuurk. Tijds. Ned. Indië, vol. 13, p.
480 (Prige, Java)¹⁸⁵⁷; Act. Soc. Sci. Ind.
Néerl., vol. 3, no. 4, p. 4, 1857-58
(Macassar); Natuurk. Tijds. Ned. Indië,

vol. 17, p. 143 (Boeling, Bali), 1858-59;
vol. 18, p. 356 (Bawean), 1859; Versl.
Ak. Wet. Amsterdam, vol. 12, p. 64,
1861 (Pinang).

Hemiramphus dussumierii Kendall⁵⁰⁷
and Goldsbrough, Mem. Mus. Comp.
Zool., vol. 26, p. 251, 1911 (Manuka;
Hille; Kusaie; Fakarava; Tavanu;
Suva; Guam).

Hemiramphus (Hyporhamphus) dussumierii
Whitley, Rec. Austral. Mus., vol. 16, no. 1,
p. 10, Oct. 7, 1927 (Michaelmas Cay,
Queensland).

Hemirhamphus dussumierii Peters,
Arch. Naturg. 267. 1855 (Mozambique,
— Bleeker, Atlas Ichth. Ind. Néerl., vol.
6, p. 56, pl. () 253, fig. 3, 1866-72
(Java, Bawean, Bali, Cocos,
Sumatra, Nias, Batu, Singapore,
Banda, Celebes, Ternate, Albi,
Buru, Amboina, Banda).
Steindachner, Monog., Mon. Zool.
bot. Ges. Wien, vol. 21, p. 584, 1871
(Red Sea). — Ishikawa and Matsuura,
Prelim. Cat. Fishes Mus. Tokyo, p. 18,
1897 (reference).

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Hemiramphus dussumierii Kendall
and Goldsborough, Mem. Mus. Comp.
Zool., vol. 26, p. 251, 1911 (Mamuka;
Hille; Kusaie; Fakarava; Tavanu;
Suva; Guam).

Hemiramphus (Hyporhamphus) dussumieri
Whitley, Rec. Austral. Mus., vol. 16, no. 1,
p. 10, Oct. 7, 1927 (Michaelmas Cay,
Queensland).

Hemirhamphus dussumierii Peters,
Arch. Naturg., p. 267, 1855 (Mozambique,
Zuelligane, Inhambane). — Schmeltz,

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Cat. Mus. Godeffroy, no. 3, p. 11, 1866
(South Sea). — Günther, Cat. Fishes
Brit. Mus., vol. 6, p. 266, 1866
(Mozambique, Zanzibar, Seychelles,
Amboyna). — Alunzinger, Verh. zool.
bot. Ges. Wien, vol. 21, p. 584, 1871
(Red Sea). — Ishikawa and Matsuura,
Prelim. Cat. Fishes Mus. Tokyo, p. 18,
1897 (reference).

branes). Anal with some oblique

7 rays lines terminally. Paired fins

pale brownish or grayish and feet

with dusky brown blotch at fin base

often lower surface of head and caudal

base

Temnura

Arch. nu

Duellina

Cat. Mus.

(South V.

Brit. Mus.

(Mozambique

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(Red Sea

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Hemirhamphus dussumieri Schmeltz,
Peters, Monatsb. Akad. Wiss. Berlin, p.
272, 1868 (Singapore). —

Poiss., p. 526, 1891 (reference). — Regan,
Ann. Natal Mus., vol. 1, p. 243, 1908
(Kosi Bay). — Günther, Journ. Mus.

Godeffroy, vol. 8, pt. 16, p. 354, 1909
(Funafuti; Jaluit; Bonham; Fiji;
Society Islands). — Gilchrist and

Thompson, Ann. Durban Mus., vol. 1, pt. 4,
p. 311, 1917 (compiled). — Weber and Beaufort,

Fishes Indo Austral. Arch., vol. 4, p. 155,
1922 (Pulu Weh; Letjih, Sumatra; Nias;
Batavia, Java; Java Sea; Sumba;
Sangi). — Barnard, Ann. South Afric.
Mus., vol. 21, pt. 2, p. 1022, Oct. 1927
(reference).

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Hemirhamphus dussumieri Schmeltz,
Cat. Mus. Godeffroy, no. 5, p. 36, 1874
(South Sea); no. 7, p. 57, 1879 (South
Sea). — Sauvage, Hist. Nat. Madagascar,

Poiss., p. 526, 1891 (reference). — Regan,
Ann. Natal Mus., vol. 1, p. 243, 1908
(Kosi Bay). — Günther, Journ. Mus.

Godeffroy, vol. 8, pt. 16, p. 354, 1909
(Funafuti; Jaluit; Bonham; Fiji;
Society Islands). — Gilchrist and

Thompson, Ann. Durban Mus., vol. 1, pt. 4,
p. 311, 1917 (compiled). — Weber and Beaufort,

Fishes Indo Austral. Arch., vol. 4, p. 155,
1922 (Pulu Weh; Letjih, Sumatra; Nias;
Batavia, Java; Java Sea; Sumba;
Sangi). — Barnard, Ann. South Afric.
Mus., vol. 21, pt. 2, p. 1022, Oct. 1927
(reference).

~~muscle & connective tissue.~~

~~Diagnosis. Differs from Hampridii~~

~~metastigma chiefly in its coloration.~~

Hemirha

Cut. Mus.
(South
Sea).

Poiss., p

Hemirhamphus dummeri Volz, Naturk.
Tijds. Ned. Indië, vol. 67, p. 178, 1907
(Priaman, Malakka, Benkulen, Telok-
betung; error).

Hemirhamphus (Hyporhamphus) dussumieri
Barnard, Ann. South Afric. Mus.,
vol. 21, pt. 1, p. 263, June 1925 (Kosi
Bay).

Hyporhamphus dussumieri Jordan and Starke,
Proc. U. S. Nat. Mus., vol. 26, p. 535, 1903
(name). — McCulloch, Austral. Mus. Mem.,
no. 5, pt. 1, p. 102, June 29, 1929 (compiled).

Hyporhamphus dussumieri Evermann
and Seale, Bull. Bur. Fisher., vol. 26,
p. 58, 1906 (1907) (Bacon; Bulan).

Hemiramphus reynaldi Valenciennes, Hist.
Nat. Poiss., vol. 19, p. 39, 1846 (type locality:
Trinquimalé, Ceylon; Calcutta). —
Day, Fishes of Malabar, p. 167, 1865;
Proc. Zool. Soc. London, 1865, p. 309
(Cochin, Malabar).

Hemiramphus reynaldi Bleeker,
Verhand. Batavia. Genoot. (Beng.
Hind.), vol. 25, p. 72, 1853 (Bengal,
Calcutta, Ceylon).

Hemiramphus reynaldi Day, Fishes of
India, pt. 3, p. 515, 1877 (India);
Fauna British India, Fishes, vol. 1,
p. 425, 1889. — Sauvage, Hist. nat.

Madagascar, Poiss., p. 526, 1891 (name).
— Weber, Siboga Exped., no. 57, Fishes,
p. 132, 1913 (Miaru; Siau). —

Pellegrin, Bull. Soc. Zool. France, vol. 39,
p. 229, 1914 (St. Dauphin, Madagascar).

? Hemiramphus eclancheri Valenciennes,
Hist. nat. Poiss., vol. 19, p. 51, 1846
(type locality: Marquesas Islands). —
Günther, Cat. Fishes Brit. Mus., vol.
6, p. 268, 1866 (copied); Journ. Mus.
Godeffroy, vol. 8, pt. 16, p. 357, 1909
(copied),

Hyporhamphus samoensis Steindachner,
Sitzs. Ber. Akad. Wiss. Wien, math.-
nat. Kl., vol. 115, pt. 1, p. 1418, 1906
(type locality: Apoluw, Samoa).

Depth $7\frac{1}{2}$ to $7\frac{4}{5}$ in body measured from snout tip to caudal base, body subcylindrical; head from snout tip $4\frac{3}{4}$, width $2\frac{2}{3}$ to $2\frac{4}{5}$. Snout $2\frac{1}{2}$ to $2\frac{3}{5}$ in head from snout tip, free upper portion little wider than long, width in snout to eye $1\frac{1}{4}$ to $1\frac{2}{5}$; eye $4\frac{1}{5}$ to $4\frac{2}{5}$ in head from snout tip, $1\frac{3}{4}$ in snout, $1\frac{1}{4}$ in in interorbital; maxillary reaches $\frac{4}{5}$ to eye, nearly vertical, length $2\frac{9}{10}$ to 3 in head from snout tip; interorbital $3\frac{1}{2}$, level. Gill rakers 7+18, lanceolate.

Scales 46 to 50 in axial lateral series to caudal base and 5 more on latter; 7 above lateral line, 2 below, 33 or 34 predorsal to occiput. Few basal scales at

terminal portion of fin beyond line
from middle of last ray to base
of second spinous membrane on its
outer edge cadmium yellow. Paired
fins dusky hyaline, pectoral darkest
on upper rays, slightly yellowish or
brownish in upper axil and on
upper outer base. [2064.]

front of dorsal and anal. Scales with 3 or 4 basal radiating striae; circuli fine.

D. II, 11, first branched ray 2 to 2 1/4 in head from snout tip; A. II, 11, first branched ray 1 4/5 to 2; caudal 1 1/8, deeply emarginate; least depth of caudal peduncle ~~depth~~ 3 4/5 to 4; pectoral 1 3/5 to 1 2/3; ventral 2 3/5 to 2 4/5, inserted slightly nearer head than caudal base.

Pale brown, scales on back narrowly edged dusky. Predorsal with 3 close set parallel neutral gray lines. narrow neutral gray streak from above pectoral axil to caudal base medially, little expanded behind. Beak and snout dusky terminally. Iris

brown of 15 keels; anterior body and upper portion of head seal brown, shade beginning about base of third dorsal spine, thence downward to point of opercle and obscurely across breast slightly before ventrals; close behind dusky cadmium orange to line of demarcation with white which begins at base of eighth spine; lower side of head and breast distinctly yellowish, margins of scales brown. Lips and top of snout dark brown. Posterior portion of white limited by curve from tenth dorsal spine to top of caudal peduncle, touching lateral line opposite lower $\frac{2}{5}$ of dorsal; fins above cadmium yellow, becoming more or less dusky at tips. Caudal peduncle and caudal included in white, fin dusky keel line on posterior third. Anal spines and

white. Fins grayish, front dorsal and anal lobes dusky, ventral pale.

Arabia, Red Sea, Zanzibar, Mozambique, Natal, Mauritius, Madagascar, Seychelles, India, Ceylon, Nicobars, Malaya, Siam, East Indies, Philippines, Queensland, Micronesia, Polynesia.

Pectorals somewhat darker on upper base.

9772. Kupirigum Island, off Balabac. January 2, 1909. Length 132 mm.

A 1141. Kagon Island. November 29, 1909. Length 150 mm.

4789 to 4798. Basa Reef, Gulf of Boni, Celebes. December 17, 1909. Length 132 to 151 mm.

460 and 461. Basa Island. December 7, 1909. Length 144 to 145 mm.

4764 to 4766. West of Malibagu Point, Celebes. November 21, 1909. Length 117 to 140 mm. Middle of side with large white or silvery gray area, with brown as shown by Bleeker; upper portion above lateral line especially shows dusky margins and slight dusky in central portion of scales but not red

Hemiramphus intermedius Cantor

Hemiramphus intermedius Cantor, Ann. Mag. Nat. Hist., vol. 9, p. 485, 1842 (type locality: Chusan). — Günther,

Cat. Fish. Brit. Mus., vol. 6, p. 260, 1866 (types; China). — Elera, Cat. Fauna

Filipinas, vol. 1, p. 573, 1895 (Luzon, Manila, Cavite, Santa Cruz).

Hemiramphus intermedius Richardson, Ichth. China Japan, p. 264, 1846 (Chinese Seas, Canton, Chusan). — Bleeker,

Nederl. Tijds. Dierk., vol. 4, p. 149, 1873 (compiled). — Abbott, Proc. U. S. Nat.

Mus., vol. 23, p. 490, 1901 (Tsin Tsin). ⁴⁰

Fowler, Hong Kong Naturalist, vol. 3, nos. 3-4, p. 266, Dec. 1932 ^(part)

Hyporhamphus intermedius Chu, Biol. Bull. St. John's Univ., no. 1, p. 87, Jan. 1931 (compiled). —

D. 14; A. 16; P. 11; V. 6. Light
green above, with silvery sides.
Abdomen white. Fins faint
yellow. Sea, estuaries and canal.
(Cantor.)

China. Although this species was
united with the Australian
Hemiramphus melanochir Valenciennes
it appears to differ chiefly in the
fewer dorsal and anal rays,
compared with D. and A.
for the Australian species. Elera's
record for Philippine materials
requires confirmation.

4711. Hong Kong market, China.
August 13, 1908. Length 80 mm.

71684 U.S.N.M. Kaha, Okamiwa, Rii
Kiu. Albatross Collection. 3 examples.
Length 96 to 103 mm.

47828 U.S.N.M. Port Jackson, New
South Wales. Australian Museum.
2 examples. Length 138 mm.

50756 U.S.N.M. Tokyo, Japan. Messrs.
Jordan and Snyder. Length 19 to 145? mm.
11 examples.

53540 U.S.N.M. Miyamouira, Yakashima.
Anderson Collection. Length 34 mm.

57725 U.S.N.M. Japan. P. L. Jouy.
Length 105 to 135 mm. 2 examples.

55549 U.S.N.M. Hawaii. Length
105 to 145 mm. 2 examples.

82872 U.S.N.M. Oahu. Wilkes Exploring
Expedition. Length 90 to 123 mm. 3 examples

517
Hemiramphus australis Steindachner

Hemiramphus australis Steindachner,
Sitzb. Ber. Akad. Wiss. Wien, Math.-
nat. Kl., vol. 53, pt. 1, p. 471, 1866
(type locality: Port Jackson). — McCulloch,
Fishes of New South Wales, ed. 2, p. 31, 1927.

Hyporhamphus australis McCulloch,
Austral. Mus. Mem., no. 5, pt. 1, p. 102,
June 29, 1929 (copied).

Reporhamphus australis Whitley,
Austral. Zoologist, vol. 6, pt. 4, p. 314,
Feb. 13, 1931 (reference).

~~Zenarchopterus duy Seale~~

Zenarchopterus duy Seale, Philippine
Journ. Sci., vol. 5, p. 267, pl. 2, fig. 2,
1911 (type locality: Sandakan, Borneo).

— Weber and Beaufort, Fishes Indo
Austral. Archip., vol. 4, p. 169, 1922
(copied).

Depth 14 in total; head $3\frac{1}{3}$. Snout long as ~~head~~ broad; eye equals interorbital, $1\frac{1}{2}$ in postorbital; beaks before snout tip equals half head length; beaks tip to eye $4\frac{2}{3}$ in total length. Lower gill rakers + 12.

D. II, 12; A. II, 16; dorsal and anal equally high and long; P. I, 10; ventral short, somewhat nearer caudal than gill opening.

Broad silvery band along side of body. On back 3 dark blue ~~bands~~ parallel lines between head and dorsal. Dorsal and anal, also hind caudal edge and last third of pectoral dotted with blackish. Length 280 mm. (Steindachner.)

New South Wales.

Microcanthus strigatus Swainson, Nat. Hist. An., vol. 2, 1839, p. 215. — Ogilby, Mem. Austral. Mus., vol. 2, 1889, p. 55 (Lord Howe Island). — Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, 1902, p. 541 (Wakamoura, Tokyo, Misaki, Nagasaki). — Jordan and Evermann, Proc. U. S. Nat. Mus., vol. 25, 1903, p. 357 (Formosa). — Snyder, Proc. U. S. Nat. Mus., vol. 42, 1912, p. 422 (Misaki), p. 510 (Okimawa). — Seale, Philippine Journ. Sci., vol. 9, ^{pt. 1,} 1914, p. 73 (Hong Kong). — McCulloch, Biol. Res. Endeavour, vol. 4, pt. 4, October 31, 1916, p. 193 (Wide Bay, Queensland). — McCulloch, Austral. Zoologist, vol. 2, part 3, February 10, 1922, p. 91, plate 27, fig. 234a (New South Wales). — Uhl, Arch. Naturges., band 89, abth. 2, heft 5, 1923, p. 22 (type; Nagasaki). — Fowler, Bishop Mus. Bull., no. 22, 1925, p. 28 (Honohu).

579

Hemiramphus laticeps Günther

Hemiramphus laticeps Günther, Cat. Fish. Brit. Mus., vol. 6, p. 267, 1866 (type locality: Fiji Islands). —

Garman, Bull. Mus. Comp. Zool., vol. 39, p. 238, 1903 (Suva). — Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, p. 355, 1909 (types).

Hemiramphus laticeps Fowler, Mem. Bishop Mus., vol. 10, p. 77, 1928 (Fiji).

Body subtetrahedral; head $2\frac{1}{2}$. Triangular part of snout broader than long; eye large, little more than interorbital and not much less than postorbital; beak before snout tip $4\frac{2}{3}$ to caudal base; parietal part of head broader than long.

Dorsal and anal scaleless.

D. 15, longer than anal; A. 15; caudal deeply forked, central rays long

as eye; ventral base midway
between pectoral axil and caudal
base.

Sides with well defined narrow
silvery band. Length 140 mm.
(Günther.)

Fiji.

611
Henitaurichthys thompsoni Fowler.

Henitaurichthys thompsoni ^{no} Fowler, Occas.

Pap. Bishop Mus., vol. 8, no. 7, 1923, p.

Honolulu.

Differs from Henitaurichthys zoster
chiefly in its uniform dark or dusky
coloration.

521

Hemiramphus affinis Günther

Hemiramphus affinis Günther, Cat. Fish. Brit. Mus., vol. 6, p. 267, 1866 (type locality: South Sea); Journ. Mus. Godeffroy, vol. 8, pt. 16, p. 355, 1909 (Samoa). — Fowler, Bull.

Bishop Mus., 22, p. 31, 1925 (Samoa).

Hemiramphus affinis Seale, Ocean. Pap. Bishop Mus., vol. 4, no. 1, p. 13, 1906 (Faté, New Hebrides; Makatea, Paumotu).

— Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 207, 1905 (1906) (Pago Pago; Apia). — Kendall and Goldborough, Mem. Mus. Comp. Zool., vol. 26, p. 251, 1911 (Tarawa, Gilbert Islands; Kusaie and Moen, Carolines; Wotje Atoll, Marshalls; Arhno). — Fowler, Proc.

Acad. Nat. Sci. Philadelphia, 1918, p. 8 (Apia, Samoa); Mem. Bishop Mus., vol. 10, p. 76 (type of Hemiramphus australensis Seale; Faté, Makatea,

522
Wotje, Samoa, Tarawa, Pago Pago,
Apia, Apia).

Hemiramphus australensis Seale,
Occas. Pap. Bishop Mus., vol. 4, no. 1,
p. 12, 1906 (type locality: Tubuai,
Austral Islands).

Hemiramphus australensis Günther,
Journ. Mus. Godeffroy, vol. 8, pt. 16,
p. 356, 1909 (copied).

Depth $9\frac{3}{5}$ to 10, body robust, subcylindrical and sides not flattened; head $2\frac{4}{5}$ to $2\frac{7}{8}$, head from snout tip $4\frac{1}{5}$ to $4\frac{3}{5}$, width $2\frac{1}{3}$ to $2\frac{1}{2}$ in its length, width $4\frac{2}{3}$ to 5 in total head length from mandible tip. Snout $2\frac{2}{3}$ to $2\frac{3}{4}$ in head from snout tip; eye $3\frac{2}{3}$ to $3\frac{3}{4}$, $1\frac{1}{4}$ to $1\frac{1}{3}$ in snout, 1 in interorbital, $1\frac{1}{3}$ in postocular; maxillary reaches $\frac{3}{4}$ to eye, length $3\frac{2}{5}$ to $3\frac{3}{5}$ in head from snout tip; interorbital $3\frac{1}{2}$ to $3\frac{3}{5}$, low, slightly depressed. Gill rakers 11 + 28, finely lanceolate, $\frac{7}{8}$ of gill filaments, which $2\frac{4}{5}$ in eye.

Scales 48 to 50 in axial lateral series from gill opening to caudal base and 4 more

New Hebrides.

Chaetodon chrysurus subsp. paucifasciatus

Ahl, Arch. Naturges., band 89, abth. A,
heft 5, 1923, p. 162. Kosseir, Red Sea.

Chaetodon chrysurus subsp. madagascariensis

Ahl, l.c., p. 163. Madagascar.

on latter; 6 above lateral line to dorsal origin, 1 or 2 below; 34 or 35 predorsal forward to occiput. Vertical fins all more or less finely scaled. Scales with single basal striae; circuli fine, all basal.

D. II, 13, first branched ray $2\frac{1}{6}$ to $2\frac{1}{4}$ in head from snout tip, last ray 4 to $4\frac{3}{5}$; A. II, 12 or II, 13, first branched ray 3 to $3\frac{1}{4}$; caudal $1\frac{1}{5}$ to $1\frac{1}{4}$, emarginate, lower lobe but little longer; least depth of caudal peduncle $4\frac{1}{5}$ to $4\frac{4}{5}$; pectoral $1\frac{3}{5}$ to $1\frac{3}{4}$; ventral $2\frac{2}{3}$ to $2\frac{4}{5}$.

Back brown, under surface paler, evidently whitish in

Chaetodon chrysurus (non Schneider 1801)
Desjardins, Proc. Zool. Soc. London, 1833,
 p. 117 (Mauritius). — Day, Fauna British
 India, vol. 2, 1889, p. 6. — Ahl, Arch.
 Naturges., band 89, abth. A, heft 5, 1923,
 p. 161 (Mauritius).

Chaetodon xanthurus Bleeker, Act. Soc. Sci.
 Ind. Neerl., vol. 2 (Amboina), 1857, p. 53.
Amboina. — Günther, Cat. Fish. Brit. Mus.,
 vol. 2, 1860, p. 515 (Aniitum). — Sauvage,
 Hist. Nat. Madagascar, Poiss., 1891, p. 261,
 plate 29, fig. 1.

Tetragonopterus xanthurus Bleeker, Atlas
 Ichth. Ind. Neerl., vol. 9, 1877, plate (16)
 378, fig. 3.

Chaetodon guttatisimus (non Bennett)
Klunzinger, Verh. zool. bot. Ges. Wien, band
 20, 1870, p. 780 (Red Sea).

Chaetodon dixoni Regan, Ann. Mag. Nat. Hist.
 London, vol. 13, series 13, 1904, p. 276, fig.

life. On back each scale more or less dark brown broadly submarginally. narrow silvery white axial lateral streak from above pectoral, broadest between dorsal and anal and all along upper edge narrow dark neutral gray bordering line. Iris and sides of head silvery white. Three dark parallel lines, close set, on middle of predorsal, median much broadest. Fins pale brown, dorsal dusky terminally on front lobe. Beak brown above, paler below.

Polynesia.

Chaetodon mertensii Cuvier.

539

Chaetodon mertensii Cuvier, Hist. Nat. Poiss., vol. 7, 1831, p. ~~36~~⁴⁷. No locality (Russian Expedition Capt. Litke). — Day, Fishes of India, pt. 1, 1875, p. 105, plate 27, fig. 2 (Ceylon; Mauritius).

Chaetodon mertensii Günther, Journ. Mus.

Godeffroy, band 2-3, ^{part} 5-6, 1874, p. 45, plate 36, fig. 13 (Paumotu).

— Jordan and Seale, Bull. Bur. Fisher., vol. 25, 1905 (1906), p. 341 (Apia and Pago Pago).

Pitharocetus mertensii Kaup, Arch. Naturges., band 26, abth. 1, 1860, p. 143.

Tetragonopterus (Liophora) mertensii Bleeker, Atlas Ichth. Ind. Néerl., vol. 9, 1877, p. 50 (Amboina).

Chaetodon (Anisochaetodon) mertensii Klunzinger, Fisch. Roth. Meer., 1884, p. 57.

A. N. S. P., nos. 31030 and 31031.
Apia, Samoa. Bureau of Fisheries.
Length 265 to 271 mm.

A. N. S. P., one example. Shortland
Island, Solomons. Alvin Seale.
Bishop Museum. Length 330 mm.

533

1321. Alibijaban Island March 6, 1909.
Length 133 mm.

949, 1281. Alimango Bay. March 5, 1909.
Length 90 to 132 mm.

1237. Candaraman Island. January 4, 1909.
Length 135 mm.

1206 and 1207. Capulaan Bay, Pablas.
February 24, 1909. Length 128 mm.

1025, 1026, 1028. Capuneypugan Point.
May 10, 1908. Length 111 to 133 mm.

714. Caracaran, Batan Island.
June 8, 1909. Length 135 mm.

725. Casmahala Bay. March 11, 1909.
Length 142 mm.

4819. Cebu market. April 4, 1908.
Length 105 mm.

1218, 1222, 4867. Galera Bay, Mindoro.
June 9, 1908. Length 127 to 140 mm.

359, 442. Galvaney Island, Luzon.
March 9, 1909. Length 131 to 137 mm.

527

Hemiramphus leucopterus Valenciennes

Hemiramphus leucopterus Valenciennes,
Hist. Nat. Poiss., vol. 19, p. 48, 1846
(type locality: Bombay). — Day, Fishes

of India, pt. 3, p. 514, 1877 (copied);
Fauna Brit. India, Fishes, vol. 1, p. 423,
1889 (copied).

Hemiramphus leucopterus Bleeker,
Verh. Batavia. Genoot. (Beng. Hind.),
vol. 25, p. 72, 1853 (reference).

Depth 12 in total length; head $2\frac{1}{2}$,
Upper jaw slightly wider at base
than long, beaked, not scaled; eye
 $1\frac{1}{3}$ in postorbital, $1\frac{1}{4}$ in interorbital;
beak $4\frac{1}{2}$ in total length; no barbels;
preorbital longer than high.

Dorsal and anal scaleless.

D. 18 (16); A. 15 (14), begins under
third dorsal ray; caudal with central

rays twice long as eye, lower lobe longer; pectoral rays 11; ventral rays 6, inserted at last third between eye and caudal base.

Silvery lateral band. Fins colorless. Beak black. (Day.)

India. Valenciennes gives length as 125 mm. It was said to differ from Hemiramphus xanthopterus in a much narrower head, longer and more slender beak and lower dorsal and anal fins.

529

Hemiramphus melanochir Valenciennes

Hemiramphus melanochir Valenciennes,
Hist. Nat. Poiss., vol. 19, p. 41, 1846
(May 1847) (type locality: Port Western,
Victoria). Castelnau, Proc. Zool.

Acclimat. Soc. Victoria, vol. 1, p. 179, 1872
(Melbourne market); Rec. London
Intern. Exhib., pt. 7, no. 5, p. 15, 1873
(Victoria).

Hemiramphus melanochir Castelnau, Proc.
Zool. Acclimat. Soc. Victoria, vol. 2, p.
143, 1873 (Fremantle); Proc. Linn. Soc.
New South Wales, vol. 2, p. 240, 1877
(Brisbane River mouth); vol. 3, p. (355)
394, 1878 (Port Jackson).

Hyporhamphus melanochir McCulloch,
Austral. Mus. Mem., vol. 5, pt. 1, p. 102,
June 29, 1929 (part; compiled).

Reporhamphus melanochir Whitley, Austral.
Zoologist, vol. 6, pt. 4, p. 314, Feb. 13,
1931 (reference).

530

Hemirhamphus intermedius (not Cantor)
Günther, Cat. Fishes Brit. Mus., vol.
6, p. 260, 1866 (Tasmania, South
Australia, New Zealand, Bay of
Islands). — Klunzinger, Atys. Ber.
Abad. Wiss. Wien, Math.-nat. Kl.,
vol. 80, pt. 1, p. 414, 1879 (Hobson Bay,
Cleveland Bay, New Zealand). — Hector,
Handbook of New Zealand, p. 16, 1879.
— Macleay, Proc. Linn. Soc. New South
Wales, vol. 5, pt. 2, p. 181, 1881 (Port
Jackson, Melbourne, Brisbane, Western
Australia). — Johnston, Proc. Roy. Soc.
Tasmania, pp. 91, 132, 1882. — Woods,
Fishes New South Wales, p. 84, pl. 37
(upper fig.) 1883. — Ogilby, Edible
Fishes New South Wales, pl. 42, 1893.
— Stead, Fishes of Australia, p. 64,
fig. 66, 1906 (New South Wales, Tasmania,
Queensland, New Zealand). — Roughley,
Fishes of Australia, p. 27, pl. 4, 1916
(Tasmania, New Zealand, Lord Howe
Island).

Hemiramphus intermedius McCoy,
 Prodr. Zool. Victoria, vol. 2, date 14,
 pl. 135, fig. 1, 1889 (Victoria). —
Fowler, Proc. Acad. Nat. Sci.
 Philadelphia, 1919, p. 7 (Victoria);
 1923, p. 43 (Victoria material).

Hyporhamphus intermedius Waite,
 Rec. Austral. Mus., vol. 5, pt. 3,
 p. 194, March 11, 1904 (Lord Howe Island);
 Rec. Canterbury Mus., vol. 1, no. 1, p. 15,
 April 25, 1907 (reference); Rec. South
 Australian Mus., vol. 2, no. 1, p. 65,
 fig. 98, April 23, 1921. — McCulloch,
 Austral. Mus. Mem., vol. 5, p. 102,
 June 29, 1929 (compiled).

532

Depth $11\frac{1}{3}$ to $11\frac{3}{5}$; body little compressed, robust, sides convex; head $2\frac{4}{5}$ to $2\frac{7}{8}$, head from snout tip 5 to $5\frac{1}{5}$, width $2\frac{3}{4}$ to $3\frac{1}{8}$ in its length, $6\frac{1}{5}$ to $6\frac{1}{2}$ in its length from mandible tip. Snout $2\frac{7}{5}$ to $2\frac{1}{2}$ in head from snout tip; eye $4\frac{1}{5}$ to $4\frac{1}{3}$, $1\frac{2}{3}$ to $1\frac{4}{5}$ in snout, 1 to $1\frac{1}{8}$ in interorbital, $1\frac{4}{5}$ to $1\frac{7}{8}$ in postocular; maxillary reaches $\frac{5}{6}$ to $\frac{7}{8}$ to eye, length $2\frac{7}{8}$ to 3 in head from snout tip; interorbital $3\frac{2}{3}$ to 4, low, nearly level. Gill rakers 9 + 21, lanceolate, $\frac{1}{2}$ of gill filaments, which $1\frac{1}{2}$ in eye.

Scales 81 or 82 in axial lateral series from gill opening to caudal base, and 5 or 6 more on latter; 8 scales above lateral

737 and 20567. Opol, Mindanao Island.
August 4, 1909. Length 102 to 108 mm.

626. Port Banalacan, Marinduque.
February 23, 1909. Length 101 mm.

707, 732. Port Galera, Mindoro.
June 9, 1908. Length 106 to 113 mm.

4814. Port Galera. October 27, 1909.
Length 108 mm.

782, 783. Port Natalvi. November 23, 1908.
Length 95 mm.

9641 [439]. Romblon Reef. March 25, 1908.
Length 78 mm. Pearl gray to white, edges
of scales blackish, giving rise to double
row of oblique lines. Ocular bar and
nuchal blotch black, surrounded above
eye by pale metallic yellow line; nuchal
blotch same. Scales on upper portion of
side with upper posterior edge yellowish.
Front and tip of each dorsal spine bright
yellow. Soft dorsal with creamy margin

line to dorsal origin, 2 below to anal origin; 65 to 68 predorsal forward to occiput.

Scales very caducous, most all fallen, so only pockets counted. Dorsal and anal largely with small scales basally, also caudal. Scales with 4 to 11 short marginal basal striae; circuli fine, mostly obscure apically.

D. II, 14, first branched ray $2\frac{1}{4}$ to $2\frac{2}{5}$ in head from snout tip; A. II, 17 or II, 18, first branched ray $2\frac{1}{2}$ to $2\frac{2}{3}$; caudal $1\frac{1}{4}$ to $1\frac{2}{4}$, lunate, lower lobe only slightly longer; least depth of caudal peduncle 5 to $5\frac{1}{8}$, compressed; pectoral $1\frac{3}{5}$ to $1\frac{3}{4}$; ventral $3\frac{1}{3}$ to $3\frac{3}{4}$, inserted little nearer caudal base than hind edge of

792, 9654 [1630], 9655 [1633]. Agajo Point, Catanduanes Island. June 10, 1909.

Length 92 to 98 mm.

854 and 855. Atulayan Island.

June 18, 1909. Length 84 to 95 mm.

920. Baliskian Bay, Lubang. July 17, 1908. Length 85 mm.

167. Busin Harbor, Burias Island.

March 8, 1909. Length 110 mm.

21584 and 21585. Guinayan Island.

June 4, 1909. Length 56 to 84 mm.

3632. Maribojoc Bay, Bohol Island.

March 26, 1909. Length 99 mm.

608 and 609, 1093, 1228. Murcielagos Bay.

August 9, 1909. Length 87 to 100 mm.

8425. Murcielagos Bay. August 20, 1909. Length 103 mm.

383 to 386. Near Dalag Bay, Luzon. June 16, 1909. Length 95 to 101 mm.

10405. North west of Verde Island.

July 22, 1908. Length 105 mm.

(4858. Murcielagos Bay. August 21, 1909. Length 64 mm.

gill opening.

Drab or brown above,
 slightly paler on under
 surfaces. ^{Three dark parallel lines on predorsal.} Silvery axial streak
 along side of body, from over
 pectoral base where narrow
 and expanding widest between
 dorsal and anal, also all
 along upper edge narrow
 dark neutral gray bordering
 line. Sides of head with pale
 to silvery tints. Iris silver
 and gray. Iris brownish,
 darker or dusky terminally,
 especially pectoral. Beak dark
 basally, pale terminally.

and back to ends of longest anal rays
 Black saddle-like ocellus in predorsal
 medially, border whitish. Black
 vertical band from occiput to eye,
 narrowed below eye across cheeks,
 but not reaching gill-opening; above
 eye band with white bordering line
 in front and behind. Soft dorsal
 and anal edged white, with black
 submarginal line. Hind caudal
 edge gray, then narrow submargin
 pale yellowish crescent with front
 edge with brown bordering line; fin
 with median ^{broad and} very pale brown crescent,
 base light yellowish. Paired fins
 uniformly pale brown.

Red Sea, Mauritius, Ceylon, East Indies,
 Melanesia, Polynesia. Known by its
 greatly enlarged median scales of the
 body, darkly reticulated.

Western Australia, South
 Australia, Victoria, ^{Tasmania,} New South
 Wales, Queensland and New
 Zealand. McCoy's figure of
Hemiramphus intermedius does
 not show the base of the anal
 scaly. Though my specimens all
 show the bases of the vertical
 fins, at least on their membranes,
 buff, the hind edge of the
 caudal is without a contrasted
 dark border. such as McCoy
 shows.

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Depth $1\frac{2}{3}$ to $1\frac{3}{4}$; head $2\frac{2}{3}$ to $3\frac{2}{5}$, width 2 to $2\frac{1}{3}$. Snout $2\frac{3}{5}$ to $2\frac{4}{5}$ in head; eye $2\frac{7}{8}$ to $3\frac{1}{2}$, $1\frac{7}{5}$ to $1\frac{1}{4}$ in snout, greater than interorbital in young to nearly equal with age; maxillary $\frac{1}{2}$ to $\frac{3}{5}$ in snout, $3\frac{1}{3}$ to 4 in head; interorbital $3\frac{1}{2}$ to 4, broadly convex. Gill rakers 4 + 12, short points, $\frac{1}{5}$ of gill filaments, which $1\frac{1}{2}$ in eye.

Scales 22 to 26 between gill opening and caudal base; tubes 30 to 35 of lateral line; 5 scales above lateral line, 12 or 13 below. Scales with 16 to 24 basal radiating striae; apical denticles 101 to 185, with 8 to 14 transverse series of basal elements; circuli fine.

D. XII or XIII, 21, I, or 22, I, fourth spine $1\frac{1}{2}$ to $1\frac{3}{5}$ in head, eighth ray $1\frac{1}{3}$ to $1\frac{2}{5}$; A. III, 16, I or 17, I, third spine $1\frac{1}{3}$ to $1\frac{2}{5}$, third ray $1\frac{1}{10}$ to $1\frac{1}{5}$; least depth of caudal peduncle 3 to $3\frac{1}{8}$; caudal $1\frac{2}{5}$ to $1\frac{1}{2}$, hind edge straight; pectoral $1\frac{1}{8}$ to $1\frac{1}{5}$; ventral 1 to $1\frac{1}{6}$.

Brown, paler below and on tail and posterior vertical fins. Medium enlarged scales of body each with dusky border and large yellowish or pale spot, whole pattern reticulate; bounded forward by uniform scales on predorsal and breast; bounded posteriorly by somewhat contrasted uniform pale area on hind part of tail, line of demarcation arched from ends of soft dorsal rays down

A. N. S. P., No. 49307 to 49309.

Melbourne, Victoria, Australia.

1909. Mrs. Agnes F. Kenyon. Length
327 to 368 mm.

resting on submarginal black line,
below which yellow of spinous tips
carried as obscure bar. Front of anal
pearl gray; edge of soft anal narrowly
edged with cadmium; cream and
black lines as on dorsal but narrower.
Broad cadmium orange bar across
vertical edges of dorsal and anal,
includes body and front of caudal
peduncle. Cadmium orange bar across
caudal medially, base of fin dusky
white, hind edge hyaline with creamy
and black submarginal lines.

20051. Romblon. March 26, 1908. Length 84
mm.

766. San Miguel Harbor, Ticao Island
April 21, 1908. Length 90 mm.

3882. San Miguel Bay. June 4, 1909.
Length 99 mm.

537

Hemiramphus marginatus (Forskål)

Esox marginatus Forskål, Descript.
Animal., pp. xiii, 67, 1775 (type locality:
Djedda). — Bonnaterre, Tabl. Ichth.,

p. 175, 1788 (Red Sea). — Gmelin, Syst.
Nat. Linn., pt. 1, p. 1393, 1789 (Red Sea).
— Walbaum, Artedi Pisc., vol. 3, p. 91,
1792 (copied). — Schneider, Syst. Ichth.

Bloch, p. 393, 1801 (Red Sea). — Rüppell,
Neue Wirbelth. Fische, p. 73, 1835
(reference).

Hemi-Ramphus marginatus Cuvier,
Règne Animal, ed. 2, vol. 2, p. 286,
1829 (reference).

Hemiramphus marginatus Klunzinger,
Verh. zool. bot. Ges. Wien, vol. 21, p. 583,
1871 (Red Sea). — Alleyne and Mackay,
Proc. Linn. Soc. New South Wales, vol. 11,
p. 349, 1876 (Palm Islands). — Weber,
Zool. Ergebn. Reise Red. Ost Ind., vol.

3, p. 456, 1894 (Singapore, Java, Flores, Celebes, Ternate, Amboina). 538

— Evermann and Seale, Bull. Bur. Fisher., vol. 26, p. 58, 1906 (1907) (Bacon).

— Jordan and Richardson, Bull. Bur. Fisher., vol. 27, p. 243, 1907 (1908) (Manila).

— Fowler, Mem. Bishop Mus., vol. 10, p. 78, 1928 (Tongatabu).

Hemirhamphus marginatus Günther, Cat. Fishes Brit. Mus., vol. 5, p. 270, 1866 (Amboyna). — Bleeker, Nederl.

Tijds. Dierk., vol. 3, p. 148, 1866 (Java, Duizend Islands, Singapore, Pinang, Celebes, Sangi, Ternate, Amboina, Flores); Atlas Ichth. Ind. Néerl., vol. 6, p. 54, pl. (8) 254, fig. 4, 1866-72 (same localities); Verh. Akad. Wet. Amsterdam, ser. 2, vol. 2, p. 275, 1868 (Obi). — Károli, Termesz. Füzetek, Budapest, vol. 5, p. 182, 1881 (Canton).

— Macleay, Proc. Linn. Soc. New South Wales,

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vol. 5, pt. 2, p. 182, 1881 (Palm Islands).
— Weber and Beaufort, Fishes Indo Austral. Archip., vol. 4, p. 157, 1922
(Pulu Weh; Batavia, Cheribon, Semarang, Pekalongan, Surabaya, Panarukan, Java; Java Sea; Sangir; Flores; Taam).

Hemiramphus russellii Van Hasselt,
Bull. Sci. Nat. Geol. Ferrassac, vol. 2,
p. 374, 1824 (on Kuddera B. Russell,
Fishes of Coromandel, vol. 2, p. 61, pl.
177, 1803, type locality: Vijagapatam).

Hemiramphus russelli Valenciennes, Hist.
Nat. Poiss., vol. 19, p. 32, 1846 (Pondichery).
— Bleeker, Verh. Batavia. Genoot., no. 6,
vol. 24, p. 16, 1852 (Batavia), 27 (Pinang);
→ Amboina

↑ (Beng. Hind.), vol. 25, p. 72, 1853 (reference);
— Károli, Térmez. Füzetek, Budapest,
vol. 5, p. 36, 1881 (Singapore).

Nederl. Indië, vol. 8, p. 344, 1855
(Quizend Islands); vol. 10, p. 362, 1856
(Ternate); vol. 16, p. 408, 1858 (Japara,

vol. 5, pt. 2, p. 182, 1881 (Palm Islands).

— Weber and Beaufort, Fishes Indo Austral, Archip., vol. 4, p. 157, 1922 (Pulu Weh; Batavia, Cheribon, Semarang, Pekalongan, Surabaya, Panarukan, Java; Java Sea; Sangir; Flores; Taam).

Hemiramphus russelii Van Hasselt, Bull. Sci. Nat. Geol. Ferrussac, vol. 2, p. 374, 1824 (on Kuddera B. Russell, Fishes of Coromandel, vol. 2, p. 61, pl. 177, 1803, type locality: Vijagapatam).

Hemiramphus russeli Valenciennes, Hist. Nat. Poiss., vol. 19, p. 32, 1846 (Pondichery).
— Bleeker, Verh. Batavia. Genoot., no. 6, vol. 24, p. 16, 1852 (Batavia), 27 (Pinang); ~~vol. 25, p. 16, 1853 (Batavia)~~

men
1915,
p.

Hemiramphus russelli Cantor, Journ. Asiatic Soc. Bengal, vol. 18, p. 1229, 1849 (1850) (Pinang). — Bleeker, natuurk. Tijds. Nederl. Indië, vol. 8, p. 344, 1855 (Quizend Islands); vol. 10, p. 362, 1856 (Ternate); vol. 16, p. 408, 1858 (Japara,

Island.

Pseudochromis nebulosus McCulloch, Mem.
Queensland Mus., vol. 3, January 18, 1875,

— 13.

vol. 2

→ vol. 3

Hemirhamphus

Proc. B.

Pinan

Rederl

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Java); Versl. Akad. Wet. Amsterdam,
vol. 12, p. 32, 1861 (Singapore); Nederl.
Tijds. Dierk., vol. 1, p. 249, 1863
(Flores).

Hemiramphus russellii Bleeker, Verh.
Batavia. Genoot., vol. 25, p. 8, 1853
(on Kuddera B. Russell); Naturk. Tijds.
Ned. Indië, vol. 4, p. 133, 1853 (Ternate);
vol. 5, p. 319, 1853 (Amboina); vol. 12,
p. 193, 1856 (Ternate); Act. Soc. Sci.
Ind. Néerl., no. 5, vol. 1, p. 7, 1856
(Amboina); no. 7, vol. 2, p. 7, 1857
(Amboina); Naturk. Tijds. Ned.
Indië, vol. 13, p. 374, 1857 (Sangi).

— Kner, Reise Novara, Fische, p. 323,
1865 (Madras).

Hemiramphus russellii Günther, Cat.
Fish. Brit. Mus., vol. 6, p. 268, 1866
(copied). — Bleeker, Atlas Ichth. Ind.
Néerl., vol. 6, p. 55, 1866-72 (Ponang). —
Weber, Fishes Indo Austral. Archip.,
vol. 4, p. 161, 1922 (copied).

Hemiramphus russellii Sauvage, Hist.
Nat. Madagascar, Poiss., p. 526, 1891
(name). — Duncker, Mitteil. Naturh.
Mus. Hamburg, vol. 21, p. 170, 1903
(1904) (compiled).

Hemi-Ramphus brevirostris Cuvier, Règne
Animal, ed. 2, vol. 2, p. 286, 1892
(on Kuddera B. Russell).

Hemiramphus brevirostris Valenciennes,
Règne Animal, Ill., Poiss., p. 235, 1839;
Hist. Nat. Poiss., vol. 19, p. 24, 1846
(reference).

Hemiramphus brevirostris Steindachner,
Abhandl. Senckenberg. Gesell., vol. 25,
p. 450, 1900 (Batjan).

Hemiramphus lutkei Valenciennes, Hist.
Nat. Poiss., vol. 18, p. 49, 1846 (type locality:
Bourou; Manila). — Bleeker, Naturh.
Tijds. Nederl. Indië, vol. 3, pp. 232,
249, 1852 (Boeroe).

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Hemirhamphus lutkei Bleeker, Nederl.
Tijds. Dierk., vol. 3, p. 150, 1866 (Buru;
Luzon).

Hemirhamphus fasciatus Bleeker, Nederl.
Tijds. Ned. Indië, vol. 5, p. (69) 89,
1853 (type locality: Lawajong, Solor).
— Weber, Siboga Exped., vol. 57, Fische,
p. 131, 1913 (Blajan Bay; West Tain
Island).

Hemirhamphus fasciatus Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 271, 1866
(type; Lawajong). — Bleeker, Nederl.
Tijds. Dierk., vol. 3, p. 152, 1866 (Solor);
Atlas Ichth. Ind. Néerl., vol. 6, p. 57,
pl. (5) 251, fig. 2, 1866-72 (Solor).

Hemirhamphus plumatus Blyth, Journ.
Asiatic Soc. Bengal, vol. , p. 288, 1858.

543

Depth $8\frac{1}{2}$ to $9\frac{1}{4}$, moderately compressed; head $2\frac{1}{2}$ to $2\frac{3}{5}$, head from snout tip $4\frac{1}{6}$ to $4\frac{1}{4}$, width $2\frac{3}{4}$ to $2\frac{7}{8}$. Snout $2\frac{4}{5}$ to 3 in head from snout tip; eye $3\frac{1}{2}$ to $3\frac{3}{4}$, $1\frac{2}{5}$ to $1\frac{1}{2}$ in snout, equals interorbital; maxillary reaches $\frac{2}{3}$ to $\frac{3}{4}$ in snout, length $3\frac{3}{5}$ to $3\frac{4}{5}$ in head from snout tip; interorbital $4\frac{1}{8}$ to $4\frac{1}{5}$, low, level. Gill rakers 6 + 18 to 20, lanceolate, $1\frac{1}{2}$ in gill filaments, which $1\frac{3}{5}$ in eye.

Scales 46 or 47 in axial lateral series from above gill opening to caudal base and 4 or 5 more on latter; 6 above, 2 below, 33 or 34 predorsal forward to occiput or 40 forward to snout end. Dorsal and anal ^(largely) scaleless, or only few small scales anteriorly basally

1192. Port Dupin. March 17, 1909.
Length 128 mm.

712. Port Valera. June 9, 1909.
Length 143 mm.

1094, 10390, 10392 to 10394. Port Janelo,
Luzon. July 13, 1908. Length 126 to 139 mm.

630, 964, 965. Port Maricabon. July 21,
1908. Length 122 to 140 mm.

985. Port Matalvi. November 23, 1908.
Length 126 mm.

19627. Port Palapay. June 3, 1904.
Length 106 mm.

638 to 640. Port Tilig. July 15, 1908.
Length 100 to 105 mm.

929 to 932. Pujada Bay. May 15, 1908.
Length 117 to 125 mm.

650. Rapurapu. June 22, 1909. Length 133 mm.

599. Romblon. May 26, 1908. Length 68 mm.

1047 and 1048, 19249. Sabatan Island.
November 8, 1908. Length 90 to 135 mm.

small scales on caudal base.
Scales with single short basal marginal
stria; circuli fine, more or less
complete, little coarser basally.

D. II, 11, first branched ray
 $4\frac{4}{5}$ to 5 in total head length;
A. II, 10, first branched ray 5 to
 $7\frac{1}{5}$; caudal $1\frac{4}{5}$ to 2, well
forked, upper lobe $1\frac{1}{5}$ to $1\frac{2}{5}$ in
lower lobe; least depth of caudal
peduncle $7\frac{3}{4}$ to $8\frac{1}{4}$ ^{in total head length}; pectoral $2\frac{3}{5}$
to $2\frac{4}{5}$; ventral $4\frac{7}{8}$ to $5\frac{1}{3}$, origin
slightly nearer pectoral tip than
caudal base.

Back drab or light brown,
sides and below paler to whitish.
where scales fall from back
exposed pockets broadly edged
blackish brown. Dark line
down middle of back. Gray

beneath. Anal spines and rays tipped lemon yellow, with narrow submarginal white stripe, then black and yellow, black showing as oblique bars across first 2 spines.

718. Near Palag Bay. June 16, 1909. Length 143 mm.

1 example. Pagapas Bay, Luzon. February 20, 1909. Length 110 mm.

274. Paluan Bay, Mindoro. December 11, 1908. Length 120 mm.

927. Panabutan Bay. February 6, 1908. Length 133 mm.

11,446. Pandanan Island. March 23, 1909. Length 81 to 84 mm.

797. Parang, Mindanao. May 23, 1908. Length 124 mm.

1300 to 1307. Polloc. May 23, 1908. Length 111 to 135 mm.

axial lateral band, from above pectoral base to middle of caudal base, widest between dorsal and anal where little less than vertical eye diameter.

Along upper edge of lateral band darker bordering line.

Iris and side of head silvery white. Beak dusky. Dorsal and caudal gray to pale dusky, other fins whitish.

Red Sea, India, Malaya, East Indies, Philippines, China, Queensland, Polynesia.

1077 and 1078. Masbate Reef, Masbate.
April 20, 1908. Length 124 to 134 mm.

821 and 822. Nonpog Island, Anabayan
Island. March 3, 1909. Length 130 to 132 mm.

8226. Murcielagos Bay. August 20, 1909.
Length 96 mm.

9033. Habatas Point, Samar. July 24,
1909. Length 169 mm.

992 and 4865. Nasugbu Cove, Luzon.
January 16, 1908. Length 133 to 137 mm.
Generally silvery with straw yellow tinge,
shading to chrome on soft vertical
fins. Orange brown stripes across
forehead; oblique bars smoky black,
centers very narrow lines with smoky
edges. Spinous dorsal membrane pearl
gray, spines dark and tips from sixth
posteriorly dark, forming front of black
submarginal bar crossing soft dorsal;
extreme tips of soft dorsal black, blue

7825. Cebu market. April 7, 1908.
Length 220 mm, beak broken off.

2 examples. Jolo, Jolo Island.
February 8, 1908. Length 26? to 30 mm.

1 example. Jolo Anchorage, Jolo.
March 5, 1908. Length 75 mm.

~~1 example. Malcochin Harbor,~~
1 example. Malcochin Harbor,
Kinapacan Island. December 18, 1908.
Length 43 mm, without beak and most
of caudal.

A. N. S. P., nos. 55967 to 55970.

Orani, Bataan Province, Luzon.

April 28, 1923. Rev. J. Clemens.

Purchased. Length 213 to 242 mm.

4836. Zolo market. February 11, 1908.
Length 155 mm.

10365. Dilig, Lubang Island. July 14,
1908. Length 105 mm.

10373. Dilig. July 15, 1908. Length 117 mm.

1063. Ligpo Point. January 1, 1908.
Length 140 mm.

918. Ligpo Point. January 18, 1908.
Length 150 mm.

7970. Little Santa Cruz Island. May 26, 1908.
Length 123 mm.

1115. Little Santa Cruz. May 28, 1908.
Length 145 mm.

644. Lode Bay, Destacado. March 13, 1909.
Length 188 mm.

1263. Mactan Island. March 25, 1909.
Length 133 mm.

1009 and 1010, 4704 and 4705. Mansalay, Mindoro.
June 4, 1908. Length 122 to 132 mm.

811. Maculabo Island. June 14, 1909. Length 102 mm.

548

Hemiramphus welsbyi Ogilby

Hemiramphus welsbyi Ogilby, Proc.
Roy. Soc. Queensland, vol. 22, p. 91,
1908 (type Moreton Bay, Queensland).

Ardeapiscis welsbyi Whitley, Austral.
Zoologist, vol. 6, pt. 4, p. 314, Feb. 13,
1931 (reference).

Depth $8\frac{1}{5}$, body robust; head $2\frac{2}{3}$.
Prenaxillary plate wider than long;
eye $1\frac{1}{2}$ in postocular, equals or
little less than interorbital; lower
jaw before tip of upper jaw $\frac{1}{7}$ longer
than rest of head or $4\frac{9}{10}$ in body.

Scales 50 in lateral series; 6 above,
dorsal and anal scaleless.

D. 13, begins far before anal,
 $1\frac{3}{5}$ times anal length, last ray
extended but not reaching caudal
base; A. 12 or 13; caudal forked,
median rays $\frac{5}{6}$ of eye and $4\frac{4}{5}$

in lower lobe, which $5\frac{2}{5}$ in body;
pectoral rays 14, long as head
behind mouth angle; ventral
origin midway between caudal
base and middle third of pectoral,
length $1\frac{7}{8}$ in head from snout tip,
inner ray extended but not reaching
vent.

Back dark green. Sides with
conspicuous silvery band, widest
below dorsal, tapers toward
either extremity, bordered above by
blue line. Lower parts pearly
white. Front dorsal rays, outer
and middle caudal rays, upper
pectoral rays and middle ventral
rays dusky. Length 400 mm.
(Ogilby)

Queensland.

550
Hemiramphus robustus Günther

Hemiramphus robustus Günther, Cat.
Fishes Brit. Mus., vol. 6, p. 270, 1866
(type locality: Long Island, Tasmania).

Depth $5\frac{1}{2}$ in length from snout tip to caudal base, body compressed, elevated; head $2\frac{1}{2}$. Triangular part of upper jaw formed by premaxillaries much broader than long; eye $1\frac{1}{2}$ in postorbital, equals interorbital; lower jaw before tip of upper jaw $4\frac{2}{3}$ in body without caudal; interorbital flat.

Scales 46 in lateral line. Dorsal and anal with thin scales anteriorly.

D. 14, much longer than anal; A. 11; caudal deeply forked, central rays shorter than eye; pectoral rays 11; ventral little nearer caudal than pectoral axil.

Sides with broad silvery band.
Length 305 mm. (Günther.)
Tasmania.

552

Hemiramphus japonicus Brevoort

Hemiramphus japonicus Brevoort,
Narr. Exped. Japan, Perry, vol. 2, p.
280, ~~1856~~ 1856 (type locality:
Loo Choo). — Izuka and Matsuura,

Cat. Zool. Spec. Mus. Tokyo, Vertebr.,
p. 166, 1920 (Inatori, Izu). — Fowler,

Mem. Bishop Mus., vol. 10, p. 75, 1928
(copied).

Hyporhamphus japonicus Jordan and
Snyder, Annot. Zool. Japon., Tokyo,
p. 60, 1901 (reference). — Jordan and

Starks, Proc. U. S. Nat. Mus., vol. 26, p.
535, 1903 (copied). — Tanaka, Journ.

College Sci. Tokyo, vol. 23, no. 7, p. 29,
1908 (Habajima, Bonin Islands).

Hemiramphus commersonii Bleeker,
 Verh. Batavia. Genoot. (Snoek. Vissch.),
 vol. 24, p. 17, 1852 (Batavia, Samarang,
 Tjilatjap, Pasuruan; Siboga); Natuurk.
 Tijds. Ned. Indië, vol. 3, p. 718, 1852
 (Tandjong Berikat at Koba, Banka),
 p. 741 (Kema, Celebes); vol. 4, p. 597,
 1853 (Halmaheira); vol. 6, p. 51, 1854
 (Sindangole, Halmaheira); vol. 7, p.
 228, 1854 (Macassar), p. 314 (Bantem);
 vol. 8, p. 296, 1855 (Ternate); Act. Soc.
 Sci. Ind. Néerl., vol. 1, no. 3, p. 5, 1856
 (Manado), p. 8 (Macassar); vol. 1, no. 5,
 p. 7, 1856 (Amboina); Natuurk. Tijds.
 Ned. Indië, vol. 13, p. 385, 1857
 (Batjan); Act. Soc. Sci. Ind. Néerl.,
 vol. 2, no. 7, p. 7, 1857 (Amboina); vol.
 3, no. 4, p. 4, 1857-58 (Macassar). —

Günther, Cat. Fish. Brit. Mus., vol. 6,
 p. 271, 1866 (Natal, Mozambique, Zanzibar,
 Amboyna). — Bleeker, Atlas Ichth.
 Ind. Néerl., vol. 6, pl. () 252, fig. 3,
 1866-72. — Schmeltz, Cat. Mus. Godeffroy,
 no. 4, p. 25, 1869 (Samoa). — Castelnau,

Body rather elongate, little compressed, caudal peduncle compressed; head $2\frac{2}{3}$ to center of hind caudal edge, head from snout tip $4\frac{8}{9}$ to caudal base. Eye large, lateral, high, nearer snout tip than hind opercle edge; beaks long, stout; teeth in jaws minute, none on palate; interorbital broad, gently convex.

Scales 54 in lateral series to caudal base, no lateral line.

D. 14, second ray longest; A. 12, origin below middle of dorsal base, second ray long; caudal deeply forked, lobes pointed, lower longer and broader; pectoral rays 11, fin long; ventral rays 6, origin nearer anal than pectoral.

In formaline bluish, dark on back, lighter below. Beaks dark.

first dorsal spine to eye then to belly
includes ventral, second from fourth
dorsal spine to middle of anal and
third from last dorsal spines along back
and as blotch on caudal peduncle posteriorly.

permutatus

bbb. First dark band across muzzle, second
from interorbital down over cheek to chin,
third from front of spinous dorsal to
belly includes ventral and hind border
diffuse, and fourth diffuse oblique band
along soft dorsal base.

singularis

aa. Hemiochus. Fourth dorsal spine prolonged
filament at least long as body; 2 black
transverse bands, first from front of
spinous dorsal to belly includes ventral
and second from last dorsal spines to
last half of anal.

acuminatus

Ana^l whitish. Dorsal and caudal dusky, paired fins little lighter. Length about 390 mm. (Tanaka.)

Riu Kiu, ^{Japan,} Bonin Islands.

Although Girard does not give any fin counts he describes the color as bluish, darkest on back and lighter below. Tinge of green on sides and upper lobe of caudal. Narrow green stripe on middle of sides from pectoral to caudal and broader bordering stripe on each side pale silvery blue tinged with greenish. Beak dark indigo blue towards tip, lighter basally. Fins pale bluish, caudal dark dusky blue.

617
both our Port Jackson specimens. However
these also do not show a black anal
base as he indicates.

555

Hemiramphus far (Forskål)

Esop far Forskål, Descript. Animal.,
pp. 13, 67, 1775 (type locality: Lohaja,
Red Sea).

Hemiramphus far Rüppell, Neue Wirbelth.
Fische, p. 74, 1835 (Red Sea). — Bleeker,

Act. Soc. Sci. Ind. Néerl. (Act. Sumatr.),
vol. 8, p. 55, 1859 (Benkulen, Priaman,
Siboga); Naturk. Tijds. Ned. Indië,
vol. 22, p. 101, 1860 (Singapore); Nederl.
Tijds. Dierk., vol. 1, p. 240, 1860 (Obi),
p. 272 (Atapupu, Timor). — Klunzinger,

Verh. zool. bot. Ges. Wien, vol. 21, p. 582,
1871 (Red Sea). — Jordan and Evermann,
Proc. U. S. Nat. Mus., vol. 25, 1902, p.
329 (Formosa). — Fowler, Journ. Acad.

Nat. Sci. Philadelphia, ser. 2, vol. 12,
p. 501, 1904 (Padang). — Jordan and
Richardson, Mem. Carnegie Mus., vol. 4,
p. 175, 1909 (Takao, Formosa). — Kendall

and Goldsborough, Mem. Mus. Comp. Zool., vol. 26, p. 252, 1911 (Vavau, Tonga).

— Weber, Siboga Exped., vol. 57, Fische, p. 129, 1913 (Kawa, west Ceram; Atjatuning, west New Guinea). — Fowler,

Copeia, no. 58, p. 62, June 18, 1918 (Philippines).

— Fowler and Bean, Proc. U. S. Nat. Mus., vol. 62, p. 14, 1922 (Taka). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1919, p. 7 (Philippines, Padang, Zanzibar).

Proc. Acad. Nat. Sci. Philadelphia, 1927, p. 262 (Philippines). — Whitley, Journ. Pan Pac. Res. Inst., vol. 3, no. 1, p. 11, Jan. Mar. 1928 (Santa Cruz Island).

Fowler, Mem. Bishop Mus., vol. 10, p. 77, 1928 (Shortland, Samoa, Fiji, Vavau, New Guinea); vol. 11, no. 5, p. 319, 1931 (compiled). — Chu, Biol. Bull. St. John's Univ., Shanghai, no. 1, p. 86, Jan. 1931 (reference).

— Fowler, Hong Kong Naturalist, vol. 3, nos. 3-4, p. 269, fig. 13, Dec. 1932 (Zanzibar, East Indies, Philippines, Melanesia, Polynesia).

Hemirhamphus far Peters, Archiv Naturg.,
p. 267, 1855 (Licuare, Mozambique).

— Günther, Cat. Fish. Brit. Mus., vol.
6, p. 271, 1866 (Natal, Mozambique,
Zanzibar, Amboina). — Bleeker, Atlas

Ichth. Ind. Néerl., vol. 6, p. 54, 1866-72
(Java, Madura, Sumatra, Singapore,
Banka, Celebes, Halmahera, Ternate,
Batjan, Obi-major, Amboina, Ceram);
Néerl. Tijds. Dierk., vol. 4, p. 149, 1873
(China). — Day, Fishes of India, pt. 3,

p. 516, pl. 120, fig. 3, 1877 (Madras). —
Bleeker, Verh. Kon. Akad. Wet. Amsterdam,
vol. 18, no. 3, p. 2, 1879 (Mauritius). —

Day, Fauna British India, Fishes, vol. 1,
p. 424, 1889. — Sauvage, Hist. Nat.
Madagascar, Poiss., p. 526, 1891 (reference).

— Duncker, Naturh. Mus. Hamburg, vol. 21,
p. 147, 1903 (1904) (Singapore). —
Steindachner, Sitzs. Ber. Akad. Wiss. Wien,
mitteil.

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Math.-nat. Kl., vol. 115, pt. 1, p. 1417, 1906
(Upolu, Samoa). — Stead, Fishes of
Australia, p. 64, 1907 (New South Wales,
Queensland). — Günther, Journ. Mus.

Godeffroy, vol. 8, pt. 16, p. 357, 1909
(Ponape, Pelau, Fiji, Society Islands).
— Beaufort, Bijdr. Dierk. Amsterdam,
p. 104, 1913 (Amboin). — Boulenger,

Cat. Fresh Water Fishes Africa, vol. 3, p.
15, fig. 9 (copied) (Zanzibar; Mozambique;
Mazoe, Rhodesia; Natal). — Gilchrist

and Thompson, Ann. Durban Mus., vol. 1,
pt. 4, p. 310, 1917 (compiled). — Weber and

Beaufort, Fishes Indo Austral. Archip.,
vol. 4, p. 156, 1922 (Madura; Tapan Bay,
Celebes; Amboin; Ceram; Atjating,
New Guinea).

Hemirhamphus (Hemirhamphus) far Barnard,
Ann. South Afric. Mus., vol. 21, pt. 1, p.
362, June 1925 (False Bay, Natal).

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Hemi-Ramphus commersonii Cuvier,
Règne Animal, ed. 2, vol. 2, p. 286,
1829 (reference).

Hemiramphus commersonii Valenciennes,
Hist. nat. Poiss., vol. 19, p. 28, 1846
(Mauritius, Red Sea, Massawah, Suez,
Seychelles, Africa, Zanzibar, Vanikoro,
Malacca). — Guichenot, notes Ile

Réunion, vol. 2, p. 29, 1862. — Martens,
Reise Ost. Afrika, Decker, vol. 3, pt. 1,
p. 143, 1869 (Licuare River). — Alleyne

and Macleay, Proc. Linn. Soc. New South
Wales, vol. 1, p. 349, 1876 (Cape York). —

→ Gilchrist and Thompson, Ann. South
Afric. Mus., vol. 6, p. 266, 1908-11
(Natal; Durban). — Snyder, Proc.
U. S. Nat. Mus., vol. 42, p. 494, 1912
(Okinawa; Riu Kiu).

{ Seale, Occas. Pap. Bishop Mus., vol. 4,
{ no. 1, p. 13, 1906 (Shortland Island). —

Proc. Zool. Acclimat. Soc. Victoria, vol. 2, p. 120, 1873 (Noumea, New-Caledonia).

— Peters, Monatsb. Akad. Wiss. Berlin, p. 445, 1876 (Mauritius). — Day, Fishes of India, pt. 3, p. 516, pl. (T) 120, fig. 30, 1877. — Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 36, 1880 (Kandavu, Fiji).

— Károli, Termesz. Füzetek, Budapest, vol. 5, p. 182, 1880 (no locality). —

Macleay, Proc. Linn. Soc. New South Wales, vol. 5, pt. 2, p. 183, 1881 (Port Jackson to Cape York); vol. 7, pt. 2, p. 593, 1882 (New Guinea). — Boulenger, Proc.

Zool. Soc. London, p. 666, 1887 (Muscat). — Sauvage, Hist. Nat. Madagascar, Poiss., p. 526, 1891 (name). — Elera, Cat. Fauna Filip., vol. 1, p. 575, 1895 (Luzon, Batanga, Masugbu). — Jordan and Seale, Bull. Bur. Fisher., vol. 25, p. 207, 1905 (1906).

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Hemiramphus commersoni Günther,
Rep. Voy. Challenger, vol. 1, pt. 6, p. 50,
1880 (Somerset, Queensland). — Volz,

Naturk. Tijds. Nederl. Indië, vol. 46,
p. 179, 1907 (Siboga, Priaman, Benkulen).

Hemiramphus moar Thiollière, Fauna
Woodlark, p. 205, 1857 (type locality:
Woodlark Island).

Hemiramphus obesus Castelnau, Mem.
Poiss. Afr. Australe, p. 64, 1861 (type
locality: Port Natal). — Gillechrist and
Thompson, Ann. Durban Mus., vol. 1, pt.
4, p. 311, 1917 (compiled).

Hemiramphus obesus Gillechrist and
Thompson, Marine Invest. South Africa,
p. 152, 1901 (reference).

Hemiramphus marginatus (not Forskål)
Jouan, Mém. Soc. Sci. Nat. Cherbourg, vol.
21, p. 334, 1877-78 (on Jouan, op. Cit.,
vol. 8, p. 304, 1861, Port de France and
Kanala, New Caledonia).

Hemiramphus mocquardianus
Thomassinot, Bull. Soc. Philomath.
 Paris, ser. 7, vol. 10, p. 165, 1886
 (type locality: Cambodia).

Depth $6\frac{2}{5}$ to $8\frac{1}{2}$, body compressed with flattened sides; head $2\frac{2}{5}$ to $2\frac{2}{3}$, head from snout tip $4\frac{1}{4}$ to $4\frac{2}{5}$, width 5 to 6 in head from mandible tip. Snout $2\frac{7}{8}$ to 3 in head from snout tip; eye $3\frac{3}{4}$ to 4, $1\frac{1}{3}$ to $1\frac{2}{5}$ in snout, 1 to $1\frac{1}{3}$ in interorbital; maxillary reaches $\frac{3}{4}$ to $\frac{4}{5}$ to eye, length $3\frac{1}{3}$ to $3\frac{2}{5}$ in head from snout tip; mandible before snout tip 5 to $5\frac{1}{5}$ in total length; interorbital $3\frac{1}{4}$ to 4 in head from snout tip, level, low, Gill rakers 8 or 9 + 22 to 24, lanceolate, subequal with gill filaments, which 2 in eye.

Scales 50 to 52 in axial lateral series to caudal base and 5 or 6 more on latter; 7 above; 30 or 31 predorsal forward to occiput or opposite gill opening. Dorsal and anal scaly

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basally and anteriorly and caudal
largely with minute scales.

D. II, 11 or II, 12, first branched ray
 $1\frac{7}{8}$ to 2 in head measured from
snout tip; A. II, 9 or II, 10, first
branched ray $3\frac{1}{3}$ to $3\frac{3}{5}$; least
depth of caudal peduncle $3\frac{1}{6}$ to $3\frac{1}{2}$;
pectoral $1\frac{1}{3}$ to $1\frac{2}{5}$; ventral $1\frac{7}{8}$ to
 $2\frac{1}{4}$.

Back and upper surfaces brown,
each scale with dark brown submarginal
crescent. Sides and below bright
silvery white. Along side of back 7
dark or vertical short blackish bars.
Usually an underlaid bright silvery
axial band along side, bordered
with narrow gray band or streak
above most its whole extent. Iris
silvery white. Fins pale or whitish,
front of dorsal lobe and caudal
darker or dusky.

Red Sea, Arabia, Zanzibar, Mozambique,
Natal, Mauritius, Seychelles, India, Malaya,
East Indies, Philippines, Indo China,

Formosa, Qui Liu, Melanesia,
Micronesia, Polynesia, Queensland,
New South Wales.

4982. Bongao Island. February 23, 1908. Length 308 mm.

5547. Cataingan, Masbate. April 18, 1908. Length 381 mm.

22318. Cebu. March 13, 1909. Length 245 mm.

6130, 6131. Mansalay, Mindoro. June 4, 1908. Length 292 to 341 mm.

4766, 4767. Rogas Point, Panay. February 4, 1908. Length 293 to 345 mm.

4 examples. Port Usan west of Pinas Island. December 17, 1908. Length 260 to 304 mm.

4569, 4570. Subig Bay, Olongapo. January 7, 1908. Length 300 to 311 mm.

4921, 4922. Tataan, Simalue Island. February 20, 1908. Length 306 to 365 mm.

13160. Tumindao Island.

February 26, 1908. Length 63 mm.

21411, 8687. Tutu Bay, Jolo.

September 19, 1909. Length 78 to 80 mm.

1 example. Sipadan Island, Borneo.

September 28, 1909. Length 48 mm.

13 examples. Great Tobea Island.

December 15, 1909. Length 33 to 56 mm.

1 example. Danawan and Si Amil Islands, Borneo. September 27, 1909.

Length 59 mm.

22731. Talisse Island. November

9, 1909. Length 58 mm.

20846. Tomahu Island. December

1909

gill opening and front of ...
sh) spots about half of six ...
and caudal as well as anal ...
margin of dorsal slightl ...
fins pale and ...
any with h

567

A. N. S. P., no. 7529. Zanzibar.
Dr. W. S. W. Ruschenberger. Length
115 mm.

A. N. S. P., nos. 27464 to 27467.
Padang, Sumatra. A. C. Harrison and
H. W. Hiller. Length 257 to 300 mm.

A. N. S. P., no. 49293. Philippines.
Commercial Museum of Philadelphia.
Length 283 mm.

A. N. S. P., one example. Shortland
Island, Solomons. Alvin Seale.
Bishop Museum (1332). Length 332
mm.

A. N. S. P., one example. Philippines.
Rev. Joseph Clemens. 1923. Purchased.
Length 375 mm.

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Chaetodon asparius Waite.

Chaetodon asparius Waite, Records Austral.

Inns., vol. 6, 1905, p. 66, plate 11, fig. 1.

Between Fremantle and Houtman's Abrolhos.

D. XIII, 21; A. III, 17. Yellow or pale brown. Dark ocular band present. Four dark narrow bars on side slightly inclined. Black ocellus, little less than eye at angle of soft dorsal. Anal with submarginal blackish band. Length 119 mm. (Waite.)

Hemiramphus brasiliensis (Linnaeus)

Esox brasiliensis Linnaeus, Syst. Nat., ed. 10, pt. 1, p. 314, 1758 (type locality: Southern America [= Jamaica]); ed. 12, pt. 1, p. 517, 1766 (India). —

Gmelin, Syst. Nat. Linn., pt. 1, p. 1393, 1789 (India). — Walbaum, Arted. Pisc., vol. 2, pp. 92, 93, 1792 (copied). — Bloch,

Naturg. Ansl. Fische, vol. 8, p. 145, pl. 391, 1794 (East Indies). — Forster,

Fauna Indica, p. 16, 1795. — Schneider, Syst. Ichth. Bloch, p. 392, 1801 (India).

— Lichtenstein, Descr. An. Forster, p. 155, (tropical Pacific), p. 257 (Tanna Island), 1844. — Kittlitz, Denks. Reise Mikronesien, vol. 2, p. 20, 1858 (Oalan).

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Hemiramphus brasiliensis Jenkins,
Bull. U. S. Fish Comm., vol. 22, p.
434, 1902 (1903) (Honolulu). —

Fowler, Proc. Acad. Nat. Sci. Philadelphia,
1919, p. 7 (Honolulu); Copeia, no. 122,
p. 82, Nov. 20, 1922 (Hawaii). —

Fowler and Ball, Bull. Bishop Mus.,
26, p. 8, 1925 (Lisiansky). — Fowler,

Mem. Bishop Mus., vol. 10, p. 76, 1928
(Nukuhiva, Honolulu, Marcus, Palmyra,
Lisiansky Islands); vol. 11, no. 5, p.
319, 1931 (Honolulu).

Hemiramphus depauperatus Lay and Bennett, Zool. Beechey's Voy., p. 66, 1839 (type locality: Oahu). —

Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1900, p. 499, pl. 19, fig. 3 (Hawaiian Islands). — Snyder, Bull. U. S. Fish

Comm., vol. 22, p. 522, 1902 (1903) (Honolulu and off Molokai, 13 fathoms). — Jordan

and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, p. 127, fig. 42, 1903 (Honolulu).

Hemiramphus depauperatus Bryan and Herre, Occas. Pap. Bishop Mus., vol. 2, No. 1, p. 127, 1902 (1903) (Marcus Island).

— Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, p. 357, 1909 (Greenwich Island).

Hemiramphus pacificus (not Steindachner) Seale, Occas. Pap. Bishop Mus., vol. 1, No. 5, p. 19, 1902 (Honolulu).

Hemirhamphus eclancheri (not
Valenciennes) Seale, Ocean. Pap. Bishop
Mus., vol. 4, No. 1, p. 13, 1906 (Hulshiva).

Depth $9\frac{2}{3}$ to 10, body well compressed, sides flattened; head $2\frac{1}{2}$ to $2\frac{3}{5}$, head from snout tip $4\frac{2}{5}$ to $4\frac{2}{3}$, width $2\frac{4}{5}$ to 3. Snout $2\frac{4}{5}$ to $2\frac{7}{8}$ in head from snout tip; eye 4 to $4\frac{1}{4}$, $1\frac{1}{2}$ to $1\frac{2}{3}$ in snout, 1 to $1\frac{1}{5}$ in interorbital; maxillary reaches $\frac{2}{3}$ to $\frac{3}{4}$ in snout, length $3\frac{2}{3}$ to 4 in head from snout tip; interorbital 4 to $4\frac{1}{4}$, flat. Gill rakers 11 + 29 or 30, lanceolate, length $1\frac{1}{4}$ in gill filaments, which $1\frac{4}{5}$ in eye.

Scales 57 to 59 in axial lateral series from above gill opening to caudal base and 6 or 7

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Edges of ^{soft} dorsal and anal white, with
with submarginal blackish band
narrowly, only line on anal; in
young band of dorsal forms black
blotch at postero-medial rays but
little smaller than eye; also dark
submarginal line on anal absent.
Caudal with hind edge narrowly gray,
then submargin yellowish band,
median black crescent and fin base
light brown; in young outer $\frac{3}{5}$ of
caudal grayish, with median black
crescent subbasal. Paired fins
dull brown.

East Indies, ~~and China~~ Melanesia,
Micronesia, Polynesia.

more on latter; 7 above, 2 below,
 39 or 40 predorsal forward to
 occiput. Vertical fins largely
 with small scales. Scales with
 1 to 4 short basal close set radiating
 striae; circuli as very fine vertical
^{parallel} striae, usually more or less complete.

D. II, 11 or II, 12, first branched
 ray $5\frac{7}{8}$ to 6 in total head; A.
II, 10 or II, 11, first branched ray
 $7\frac{3}{4}$ to 8; caudal well forked,
 lower lobe much longer or $2\frac{1}{4}$ to
 $2\frac{2}{3}$; least depth of caudal
 peduncle 9 to 10; pectoral $2\frac{2}{5}$
 to $2\frac{3}{5}$; ventral 6 to $6\frac{1}{4}$, origin
 about an eye diameter nearer
 caudal base than pectoral base.

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Depth $1\frac{3}{5}$ to $1\frac{2}{3}$; head $2\frac{3}{4}$ to $2\frac{7}{8}$, width
 $2\frac{1}{4}$ to $2\frac{2}{5}$, snout $2\frac{2}{3}$ to $2\frac{2}{3}$ in head,
eye 3 to 4, 1 to $1\frac{1}{2}$ in snout, greater
than interorbital in young to $1\frac{1}{8}$ in
interorbital with age; maxillary
 $\frac{1}{2}$ to $\frac{3}{5}$ in snout, $3\frac{1}{2}$ to $3\frac{3}{4}$ in head;
interorbital $3\frac{3}{4}$ to 4, broadly convex.
Gill rakers 4 + 9, short points, $4\frac{1}{2}$
in gill filaments, which $1\frac{1}{2}$ in eye.

Scales 27 to 29 between gill opening
and caudal base; scales 26 or 27 in
lateral line; 5 or 6 scales above
lateral line, 12 or 13 below. Scales
with 9 to 18 basal radiating striae;
apical denticles 61 to 157, with 7 to 12
transverse series of basal elements; circuli
five.

D. XIII, 22, I or 23, I, last spine $1\frac{1}{3}$ to
 $1\frac{3}{5}$ in head, twelfth ray $1\frac{2}{5}$ to $1\frac{3}{4}$;
A. III, 19, I or 20, I, third spine $1\frac{3}{4}$ to
 $1\frac{4}{5}$, tenth ray $1\frac{1}{2}$ to $1\frac{3}{5}$; least depth
of caudal peduncle $3\frac{1}{4}$ to 4; caudal
 $1\frac{1}{2}$ to $1\frac{4}{5}$, hind edge slightly convex;
pectoral $1\frac{1}{4}$ to $1\frac{1}{2}$; ventral $1\frac{1}{4}$ to $1\frac{1}{3}$.

Brown, paler on breast, abdomen and
lower surfaces. With age large dif-
fuse dusky blotch, longer than head,
on front side of back. Body scales
all with slightly darker brown
borders, producing reticulate appear-
ance. Black band from predorsal
to eye and below, where broader to
gill-opening but not across chest.

Back and upper surfaces brown, sides and below paler to whitish. Sides of head with silvery white reflections. Iris silvery white. Fins all dull brownish.

India, East Indies, Micronesia, Polynesia, Hawaii. Also in the tropical and subtropical Atlantic.

Tetragonopterus (Linophora) rafflesi
Bleeker, Atlas Ichth. Ind. Néerl., vol.
 9, 1877, p. 49 (Sumatra, Java, Bawean,
 Celebes, Sumbawa, Timor, Halmahera,
 Ternate, Ceram, Amboina, Harau, Gram,
 Anu, Waigiu, New Guinea).

Chaetodon princeps Cuvier, Hist. Nat. Poiss;
 vol. 7, 1831, p. ~~25~~³³. New Ireland. - Lesson,
 Voy. Coquille, Zool. ^{vol.} in 2, pt. 1, ¹⁸³⁰ (1831), p. 177
 (Port Praslin, New Ireland).

Chaetodon sebae Cuvier, l.c., p. ~~40~~⁵². New Guinea.

Coradion chrysozonus (non Cuvier) Bleeker,
 l.c., plate (14) 376, fig. 5.

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A. N. S. P.,
~~East Indian~~, no. 7530 to 7532.

Hawaiian Islands, Dr. J. K.
Townsend. Length 340 to 357 mm.

A. N. S. P., nos. 29501 and 29502.
Honolulu. Dr. J. D. Wood. Stanford
University. Length 247 to 255 mm.

A. N. S. P., one example. Honolulu.
J. W. Thompson. Bishop Museum.
Length 380 mm.

A. N. S. P., two examples. Honolulu.
1923. Henry W. Fowler. Length 300 to
320 mm.

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Chaetodon rafflesii Bennett.

Chaetodon rafflesii Bennett, Life of Raffles, 1830, p. 687. Sumatra. — Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 27 (type; Ambonia). — Günther, Journ. Mus. Godeffroy, band 2-3, heft 5-6, 1874, p. 44, plate 35, fig. C (Pelew Islands; Fiji). — Von Martens, Preuss. Exped. Ost Asien, 1876, p. 388 (Ambonia). — Meyer, Ann. Soc. Espan. Hist. Nat. Madrid, vol. 14, 1885, p. 19 (Manado, Celebes).

Chaetodon rafflesii Steindachner, Abhand. Senckenberg. Gesell., band 25, 1900, p. 419 (Batjan).

Chaetodon rafflesii Ahl, Arch. Naturges., band 89, abth. A, heft 5, 1923, p. 158 (New Pomerania, Ambonia, New Hannover, Pitatubi Baka, Thalassia, New Guinea, Rulun, Sifora, Matupi).

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Hemiramphus georgii Valenciennes

Hemiramphus georgii Valenciennes, Hist. Nat. Poiss., vol. 19, p. 37, pl. 555, 1846 (type locality: Mahé Bay, Coromandel).

— Cantor, Journ. Asiatic Soc. Bengal, vol. 18, pt. 1, p. 1230, 1849 (1850) (Pinang).

— Jerdon, Madras Journ. Lit. Sci., 1851, p. 147. — Bleeker, Verh. Batavia. Genoot., (A. noek. Viss.), vol. 29, p. 19, 1852 (Batavia), p. 27 (Pinang); (Beng. Hind.), vol. 25, p. 72, 1853 (compiled); Natuurk. Tijds. Ned. Indië, vol. 17, p. 143, 1858-59 (Boleling, Bali); Act. Soc. Sci. Ind.

Néerl., no. 6, vol. 3, p. 2, 1857-58 (Sinkawang, Borneo); ^{no. 7,} vol. 5, p. 2, 1858-59 (Sinkawang);

Verh. Akad. Wet. Amsterdam, vol. 12, p. 32, 1861 (Singapore). — Day, Fishes of Malabar, p. 170, 1865 (copied). — Peters, Monatsb. Akad. Wiss. Berlin, 1876, p. 445 (Mauritius). — Sauvage, Hist. Nat. Madagascar, Poiss., p. 526, 1891 (reference).

— Pellegrin, Bull. Mus. Hist. Nat. Paris, vol. 4, p. 228, 1898 (Guam).

— Jordan and Evermann, Proc. U.S. Nat. Mus., vol. 25, p. 329, 1902 (Formosa).

— Roule, Mém. Soc. Zool. France, vol. 15, p. 316, 1902 (Port Said). — Jordan

and Richardson, Mem. Carnegie Mus., vol. 4, p. 176, 1909 (copied). — Fowler, Proc.

Acad. Nat. Sci. Philadelphia, 1927, p. 262 (Orion, Philippines); Mem. Bishop Mus., vol. 10, p. 75, 1928 (Kingsmills); Proc.

Acad. Nat. Sci. Philadelphia, 1929, p. 603 (Hong Kong); Hong Kong Naturalist, vol. 3, nos. 3-4, p. 269, fig. 14, Dec. 1932 (Hong Kong, ^{Micronesia} Philippines).

Hemirhamphus georgii Blyth, Prodr. Faun. Zeylon. Kelaert, p. 87, 1857 (Ceylon).

— Kner, Reise Novara, Fische, p. 323, 1865 (Madras). — Günther, Cat. Fishes

Brit. Mus., vol. 6, p. 264, 1866 (Bengal; Pinang). — Day, Fishes of India, pt. 3, p. 515, (1877) pl. 120, fig. 2; Fauna

British India, Fishes, vol. 1, p. 424,
1889. — Sauvage, Hist. nat. Madagascar,

Poiss., p. 526, 1891 (reference). — Elera,
Cat. Fauna Filip., vol. 1, p. 575, 1895
(Cebu). — Duncker, Mitteil. Naturh.

Mus. Hamburg, vol. 21, p. 170, 1903
(1904) (reference). — Günther, Journ.

Mus. Godeffroy, vol. 8, pt. , p. 355,
1909 (compiled). — Weber and Beaufort,
Fishes Indo Austral. Archip., vol. 4,
p. 147, fig. 56, ^(pharyngeal arches) 1922 (Pulu Weh; Bagan
Api Api, Sumatra; Batavia, Semarang,
Pekalongan, Java; Java Sea).

Hemiramphus georgii Gorgoza, An.
Soc. Españ. Hist. Nat., Madrid, vol. 14,
p. 73, 1885 (Comprado; error).

Hemiramphus longirostris (not Valenciennes)
Bleeker, Nat. Geneesk. Arch. Nederl. Ind.
(Batavia), vol. 2, p. 512, 1845 (Batavia).

Hemiramphus cantoris Günther,

Cat. Fish. Brit. Mus., vol. 6, p. 264, 1866 (type locality: Amoy; China Seas).

— Duncker, Mitteil. naturh. Mus. Hamburg, vol. 21, p. 170, 1903 (1904) (Kuala Lumpur).

— Silera, Cat. Fauna Filip., vol. 1, p. 575, 1895 (Luzon, Cavite, Santa Cruz).

Hemiramphus cantori Bleeker, Nederl.

Tijds. Dierk., vol. 3, p. 145, 1866 (Java, Bali, Pinang, Singapore, Borneo); Atlas Ichth. Ind. Néerl., vol. 6, p. 53, pl. ()

252, fig. 2, 1866-72 (same localities); Nederl.

Tijds. Dierk., vol. 4, p. 149, 1873 (Amoy).

— Day, Fishes of India, vol. 3, p. 514, pl. 119, fig. 1, 1877. — Macleay, Proc. Linn. Soc.

New South Wales, vol. 7, p. 593, 1882

(New Guinea). — Day, Fauna British India, Fishes, vol. 1, p. 423, fig. 137, 1889.

Hemiramphus cantoris Jordan and Seale,

Bull. Bur. Fisher., vol. 26, p. 8, 1906 (1907) (Cavite). — Seale, Philippine Journ. Sci.,

vol. 9, p. 60, 1914 (Hong Kong). — Fowler, Copeia,

no. 58, p. 62, June 18, 1908 (Philippines).

Hemirhamphus cantori Bleeker, Nederl.
Tijds. Dierk., vol. 3, p. 145, 1866

- Hemiramphus cantori Wu, Contrib.
Biol. Lab. Sci. Soc. China, vol. 5, no. 4,
p. , fig. 53, 1929 (Amoy).

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Depth $12\frac{1}{4}$ to $12\frac{3}{4}$, body robust, little compressed, sides somewhat flattened and approximated below; head $2\frac{2}{5}$ to $2\frac{3}{5}$, head from snout tip $4\frac{1}{4}$ to $4\frac{2}{5}$, width 3 to $3\frac{1}{4}$. Snout $2\frac{1}{5}$ to $2\frac{2}{5}$ in head from snout tip, width $1\frac{2}{3}$ to $1\frac{3}{4}$ in its length; eye $4\frac{1}{3}$ to $4\frac{1}{2}$ in head, $1\frac{1}{8}$ to 2 in snout, $1\frac{1}{8}$ to $1\frac{1}{4}$ in interorbital; maxillary reaches $\frac{4}{5}$ to $\frac{7}{8}$ to eye, length $2\frac{1}{2}$ to $2\frac{2}{3}$ in head from snout tip; interorbital $3\frac{2}{3}$ to 4, nearly level, only slightly depressed medially. Gill rakers $15 + 4^2$, lanceolate, equal gill filaments, which $2\frac{2}{5}$ in head.

Scales 56 to 58 in lateral axial series from above gill opening to middle of caudal base, and 6 or 7 more on latter; 7 above, 3 below, 4 or 4²

-about breadth of caudal peduncle.
 Anal olive gray basally, shading to
 pale cadmium tipped with sulphur
 yellow resting on gray line with broader
 black one below. Caudal yellow, tip
 hyaline adjoining narrow black band,
 also broader black median band.
 Pectoral hyaline, rays with narrow
 black lines. Ventral white.

497. Tataan, Tawi Tawi Group. February
 21, 1908. Length 127 mm.

10401 and 10446. Tilig, Lubang Island.
 July 14, 1908. Length 109 to 112 mm.

533. Asada Island. March 5, 1908.
 Length 130 mm.

10410, 10438, 10440. Varadero Bay, Mindoro.
 July 23, 1908. Length 128 to 132 mm.

893. West coast of Palawan Island. November
 18, 1908. Length 171 mm.

predorsal forward to occiput. Dorsal and anal scaleless, or only very few basally. Caudal scaly basally. Scales with 1 or 2 basal radiating striae; circuli rather coarse.

D. II, 12, first branched ray ~~2 1/3 to 2 1/2~~ in 6 to 6 1/4 in total head length; A. II, 12, first branched ray 6 3/4 to 7; caudal 2 2/3 to 3 1/5, deeply emarginate, upper lobe 1 4/5 to 1 3/5 in lower; least depth of caudal peduncle 12 to 12 1/2; pectoral 4 to 4 1/4; ventral 8 to 11 1/3, origin midway between depressed pectoral tip and caudal base.

Back pale brown, where scales fallen patches dusky to neutral black. Dark line

876 [186], 881 [187]. Tataan, Simianu⁵²³
Island. February 20, 1908. Length 130 to
132 mm. Ground color olive gray,
becomes white below. Forehead crossed
by 5 narrow orange lines and ocular
bar broad. Lower head and breast white.
Double series of oblique gray lines
cross side; front series of 6 from dorsal
down and forward, hindmost in line
with hind opercle edge; 12 pass obliquely
down from hindmost to anal base;
interspaces wide as pupil, anterior ones
slightly wider. Dorsal olive gray anteriorly,
bright yellow posteriorly, tipped from
fourth or fifth spine backward with
black; another black band begins at
about same point and passes backward
under first, turns downward across
middle of soft dorsal, crosses caudal
peduncle and extends into anal space

down middle of predorsal.
Sides and lower surface little paler, evidently whitish or silvery white in life. Gray white to silvery axial band from above gill opening, narrow, widest between dorsal anal where equal to pupil diameter. Edge above of lateral band as dark neutral gray line. Iris and side of head silvery white. Dorsal, caudal and pectoral brownish, other fins whitish. Beak and top of head dark. Rather broad cutaneous flap along edge of beak neutral black marginally.

Red Sea, Mauritius, India, Ceylon, Malaya, East Indies, Philippines, China, Formosa, Micronesia.

spinous membranes pale and fronts of spines more or less dusky and black; posterior vertical fins bright cadmium. Anal spines pale yellow, membranes dusky, terminal half of fin cadmium except sulphur margin with narrow white and black submarginal bars. Caudal yellow, except lenticular basal bar and narrower blackish one submarginal, extreme edge hyaline.

Paired fins slightly dusky.

1148 and 1149. Sablayan? December 13, 1908. Length 38 mm. [758, 770.]

1203. Sangre de Cristo Island. February 24, 1908. Length 121 mm.

762. San Miguel Harbor, Ticao Island. April 21, 1908.

6911. Santo Domingo, Batan, November 7, 1908. Length 142 mm.

571 to 573. Surigao, Mindanao. March 8, 1908. Length 130 to 149 mm.

584
1 example, Abuyog, Leyte. July
26, 1909. Length 223 mm.

5322. Catbalogan market, Samar.
April 16, 1908. Length 305 mm.

1 example. Manila market, Luzon.
April 15, 1909. Length 150 mm.

21927. Manila market. April 16, 1909.
Length 201 mm.

3 examples. Maricaban ~~Point~~
Port, Luzon. July 20, 1908. Length
90 to 115 mm.

1 example. Nasugbu. January 15, 1908.
Length 42 mm.

1 example. Rogas Point, Panay.
February 3, 1908. Length 78 mm.

1 example. Ragay Bay, Ragay Gulf,
Luzon. March 19, 1909. Length 56 mm.

595

2 examples. Tumindao anchorage.
February 25, 1908. Length 44 to 58 mm.

1 example, Sandakan anchorage,
Borneo. March 1, 1908. Length 240 mm.

D. 5633. Selang Point, N. 24° W., 11.8
miles (lat. $1^{\circ}03'00''$ S., long. $127^{\circ}44'00''$
E.), south of Patiente Strait.
December 2, 1909. Length 36 mm.

A. N. S. P., Nos. 55963 to 55966.

Orion, Bataan Province, Luzon.

May 11, 1923. Rev. J. Clemens.

Purchased. Length 260 to 315 mm.

521

675 to 677, 695 and 696, Sablayan,
Mindoro. December 13, 1908. Length 106 to
128 mm. Generally very pale to dusky
silvery, tinged with pale lemon. Lower
head, breast and belly white. Forehead with 6
transverse orange bars. Diagonal lateral bars
slaty. Black bar begins obscurely at fourth
dorsal spine continued across spinous
portion terminally, curves forward on soft
dorsal, widens, crosses base at caudal
peduncle and extends half way to lower
anal edge, below basal portions of soft
rays dark; dorsal yellow medially,
begins on antepenultimate spine, broadens
and curves above black bar, covers about
central third to vertical edge; above this
black, becoming distinct on tips of ^{third and fourth} spines,
continued as narrow bar to vertical edge,
and above on soft fin narrow bright
blue bar, extreme soft edge black;